LOWER CUMBERLAND RIVER PROJECTS

HEARING

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON PUBLIC WORKS UNITED STATES SENATE

EIGHTY-SECOND CONGRESS

FIRST SESSION

ON

S. 97 and S. 98

BILLS TO PROVIDE FOR MODIFICATION OF THE CUMBERLAND RIVER PROJECT TO INCLUDE POWER FACILITIES AT CHEATHAM DAM, TENN., AND CONSTRUCTION OF THE LOWER CUMBERLAND DAM, KY. AND TENN.

AUGUST 20, 1951

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LOWER CUMBERLAND RIVER PROJECTS

FRIDAY, AUGUST 24, 1951

UNITED STATES SENATE,
SUBCOMMITTEE ON FLOOD CONTROL—RIVERS AND HARBORS
OF THE COMMITTEE ON PUBLIC WORKS,
Washington, D. C.

The subcommittee met, pursuant to notice, at 10:05 a. m., in room 412, Senate Office Building, Senator John L. McClellan presiding.

Present: Senators McClellan, Clements, Dworshak, and Carlson.

Also present: Senator Underwood, of Kentucky; Theo W. Sneed of the committee staff.

Senator MCCLELLAN. The committee will come to order.

Senator McKellar, this is your day before the Public Works Committee. We do not have anything else scheduled except your measures.

Senator MCKELLAR. That is very kind of you to say that.

Senator MCCLELLAN. The committee will proceed to hear the views and recommendations regarding S. 97 and S. 98.

(The bills referred to and description of the projects are as follows:)

[S. 97, 82d Cong., 1st sess.]

A BILL To authorize the construction, operation, and maintenance of facilities for generating hydroelectric power at the Cheatham Dam on the Cumberland River in Tennessee

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the comprehensive plan of improvement of the Cumberland River and tributaries for navigation, flood control, power development, and other purposes authorized by section 1 of the Act of Congress of July 24, 1946 (Public Law 525, Seventy-ninth Congress), is hereby amended to include the construction, operation, and maintenance under the direction of the Secretary of the Army and supervision of the Chief of Engineers of hydroelectric power generating facilities (including step-up switchboard) at the Cheatham Dam on the Cumberland River in Tennessee at an estimated additional cost of $15,000,000, for the power facilities.

[S. 98, 82d Cong., 1st sess.]

A BILL To authorize the construction, operation, and maintenance of the Lower Cumberland Dam and Reservoir on the Cumberland River in Kentucky and Tennessee, for navigation, flood control, hydroelectric power, and other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the comprehensive plan of improvement of the Cumberland River and tributaries for navigation, flood control, power development, and other purposes authorized by section 1 of the Act of Congress of July 24, 1946 (Public Law 525, Seventy-ninth Congress), is hereby amended to include the construction, operation, and maintenance under the direction of the Secretary of the Army and supervision of the Chief of Engineers of the Lower Cumberland Dam and Reservoir on the Cumberland River at an estimated cost of $130,000,000 in lieu of the authorized Kuttawa (Eureka) and Dover Dams

SEC. 2. The Lower Cumberland Dam and Reservoir project shall be constructed, operated, and maintained for navigation, flood control, hydroelectric

power, and other purposes with the dam site approximately thirty miles upstream from the mouth of the Cumberland River, a normal operating pool at approximately elevation 355, and top of flood-control storage pool at approximately elevation 375. In addition to the reservoir, dam, navigation lock, hydroelectric generating facilities (including step-up switchyard), the project may include a canal between the Lower Cumberland Reservoir and the Kentucky Reservoir on the Tennessee River for navigation and to permit the utilization of the flow of the Cumberland and Tennessee Rivers to the best possible advantage, if in the opinion of the Chief of Engineers, such a canal is found to be necessary or advisable on the basis of further studies.

SEC. 3. Such modifications may be made in the Lower Cumberland Dam and Reservoir as in the discretion of the Secretary of the Army and the Chief of Engineers may be advisable.

CHEATHAM LOCK AND DAM, CUMBERLAND RIVER, TENN.

Location.—At mile 148.7 on the Cumberland River in Cheatham and Dickson Counties, Tenn., about 9 miles northwest of Ashland City and 42 river miles below Nashville, Tenn.

Existing project.—The navigation project now in operation below Nashville consists of locks and dams A to F, inclusive, and No. 1. The locks are 52 by 280 feet, from 28 to 47 years old, and provide a 6-foot channel.

Authorized project.—The project authorized in the 1946 River and Harbor Act provides for three moderate-height dams with 110- by 800-foot locks, to provide a 9-foot channel 200-feet wide below Nashville. The Cheatham Dam is the uppermost of the three units, and will eliminate lock and dams 1 and A. Its pool will extend upstream 52.3 miles to lock and dam No. 2. The dam will be a concrete overflow section with a maximum height of 65 feet. The lock will have a normal lift of 27 feet.

Proposed modification.—Inclusion of a powerhouse and power-generating facilities consisting of three 12,000-kilowatt units. No alteration would be made to the lock and dam.

Fiscal.—The estimated cost of the Cheatham lock and dam in 1940 was $6,400,000. On the basis of 1951 price levels, the estimated cost is $14,200,000 for the navigation only project. Of this amount, $3,636,500 has been appropriated. The budget estimate for fiscal year 1952 is $3,000,000. The estimated cost of the proposed power-generating facilities based on present price levels is $18,200,000.

Benefits.—The existing navigation project below Nashville with its small locks and inadequate depths is obsolete, does not meet the needs of present commerce, and hinders development of extensive new commerce. Present traffic exceeds 1,600,000 tons annually, consisting principally of oil and steel products. The Cheatham lock and dam will be completed in late 1953, and will meet the needs of prospective commerce, eliminate multiple lockages for existing tows, shorten traveling time, and benefit the area generally. Because of the vast defense needs, there is a shortage of power in the area, despite the large developments of the Tennessee Valley Authority. Power demands and uses are increasing more rapidly than new power facilities can be installed. The annual value of the power that would be produced is estimated at $1,212,000 annually, and the ratio of annual benefits to costs for the power features is 1.55. That ratio for the navigation project is 3.04.

LOWER CUMBERLAND LOCK AND DAM, CUMBERLAND RIVER, KY.

Location.—At mile 30.5 on the Cumberland River 1 mile north of Grand Rivers, Ky., and about 4 miles northeast of Kentucky Dam on the Tennessee River.

Authorized project.—The project authorized in the 1946 River and Harbor Act provides for three moderate height dams with 110- by 800-foot locks to provide a 9-foot navigation channel 200 feet wide below Nashville. The Kuttawa and Dover locks and dams are the downstream units in this plan, and would replace existing locks B to F.

Proposed modification.—Substitution of one high head dam for the authorized Kuttawa and Dover Dams, to be located near the Kuttawa site. The dam would be an overflow concrete section across the channel with a maximum height of about 125 feet, flanked by earth sections with maximum heights of about 50 feet. The lock would be 110 by 800 feet and have a maximum lift of 73 feet from the pool of Ohio River dam No. 52. The dam would include a powerhouse and power

generating facilities consisting of five 26,000 kilowatt units, a total of 130,000 kilowatts. The total output would be 551,000,000 kilowatt-hours annually.

The reservoir would have a total area of 96,000 acres and extend upstream to the Cheatham Dam. It would have a total capacity of 2,248,000 acre-feet, of which 1,273,000 acre-feet would be reserved for flood control. The power drawdown would be 5 feet. The flood-control pool would inundate 34,000 acres. The Illinois Central Railroad would be relocated across the dam.

Fiscal.—The estimated cost of the multiple-purpose lower Cumberland project is $130,000,000. The total estimated cost of the authorized Kuttawa and Dover navigation projects is $29,500,000.

Benefits.—The benefits from the operation of this project would be large. It would complete the navigation project below Nashville to permit full realization of maximum navigation benefits. The other locks would be eliminated, thus decreasing maintenance and operation costs. Large tows could be locked through in the minimum of time, and the travel time reduced. Annual navigation benefits are estimated at $3,114,000.

Installation of hydroelectric power facilities will utilize one of the great resources now going to waste. Completion of the authorized navigation dam at the Kuttawa site would restrict development of the site for hydroelectric power. The importance of the area is increasing from the standpoint of national defense. A large plant of the Atomic Energy Commission is being constructed near Paducah, Ky., near the lower Cumberland site. The Federal Power Commission has estimated the power demands for the next few years, and urged adoption of this project to meet the growing needs. The estimated annual value of the power that would be produced at the site is $4,183,000.

The drainage area above the site is 17,400 square miles. The reservoir would control the runoff from this area. It could be operated to reduce the flood heights on the lower Ohio and Mississippi Rivers. It is estimated that 80,000 cubic feet per second could be withheld from a project flood and 50,000 cubic feet per second from other floods originating in the Cumberland River Basin. The flood-control benefits are estimated at $2,000,000 annually.

The total estimated benefits amount to $9,297,000 which gives an economic ratio of 1.67 to 1.0. This does not include benefits that would be derived from recreation, or the benefits that might accrue from construction of a canal connecting the lower Cumberland Reservoir with the Kentucky Reservoir, to permit more flexible operation of all features of both projects.

Senator McCLELLAN. I assume, Senator, that we can just combine and discuss the two together.

STATEMENT OF HON. KENNETH McKELLAR, A UNITED STATES SENATOR FROM THE STATE OF TENNESSEE

Senator McKELLAR. They are both on the Cumberland River.

Senator McCLELLAN. The committee is very happy to have you this morning, Senator McKellar.

Senator McKELLAR. That is very kind of you, sir.

I have a number of witnesses back there, and I think there are a number from Kentucky, because one of these dams is very largely in Kentucky.

Senator CLEMENTS. The dam is in Kentucky.

Senator McCLELLAN. Where are the benefits?

Senator CLEMENTS. Both States.

Senator McKELLAR. Both States; yes, sir.

Senator McCLELLAN. Yes.

Senator McKELLAR. Let me read the bill. It is very short. [Reading:]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the comprehensive plan of improvement of the Cumberland River and tributaries for navigation, flood control, power development, and other purposes authorized by section 1 of the Act of Congress of July 24, 1946 (Public Law 525, Seventy-ninth Congress), is hereby amended to

include the construction, operation, and maintenance under the direction of the Secretary of the Army and supervision of the Chief of Engineers of hydroelectric power generating facilities (including step-up switchboard) at the Cheatham Dam on the Cumberland River in Tennessee at an estimated additional cost of $15,000,000 for the power facilities.

Senator McCLELLAN. That is in Tennessee it says here.

Senator McKELLAR. Yes, sir, the dam is in Tennessee. The benefits will apply to both States, and I am glad Senator Clements is here so that we can cooperate in the matter.

Mr. Chairman, when I first started dams in this area they were called an iridescent dream. I introduced a bill to build a dam at Muscle Shoals, Ala., on the Tennessee River.

My own brothers were in the railroad business, and it was first projected as a navigation dam, but it was not long before its principal objective was power, and later on we built all the dams on the Tennessee River, and I was lucky enough to be a member of the Appropriations Committee, and Senator McClellan knows about the work of that committee.

We finally got it through and it was built, was a completed dam, on the 1st of January 1933.

The reason I say so was because President Roosevelt had been elected but had not been sworn in at that time. We swore Presidents in at that time on the 4th of March, but the law has since been changed to the 1st of January.

He telephoned me, and a party of us went down to Muscle Shoals, and the dam was completed and furnishing power and distributing power at that time, and all of these other dams have been built since.

I have been lucky enough to be associated with it in that all the money, as you know, has to come through the Appropriations Committee, and the Appropriations Committee—I want to say this, Mr. Chairman—was not only good to me but to the western Senators with the balance of power because we had a terrific fight—they had the balance of power and they started with me, and in that way we got the dams through, and they have been very, very kind ever since.

Incidentally, I hope I have helped them some since in the way of dams out in their country, because to my mind electricity by water power is one of the greatest improvements in the present-day world.

It was regarded, as I say, as an iridescent dream. People did not believe that it could be made that way. The power companies had a big lobby here and they were very active, and the railroads had a lobby here, too, and they were quite active, but we got it through and after we got it through on the Tennessee River, why, we took up the Cumberland River, and they are building dams there now.

As you know, the House left funds for the Cheatham Dam out of the appropriation bill, and they left out the dam at Nashville, just above Hermitage; I do not know whether they call it Hermitage or not.

Mr. SNEED. Old Hickory.

Senator McKELLAR. Old Hickory, and they left out even planning money for that. They stopped work on the Cheatham Dam and they stopped work on Old Hickory. Well, Old Hickory—if it is Old Hickory.

Senator McCLELLAN. I am not sure. That is what the clerk says.

Senator McKELLAR. What is the dam?

Senator McCLELLAN. Old Hickory lock and dam.

Senator McKellar. Well, we got, I think 6 million for that and 3 million for the continuation—or it may be just the other way, 3 million for the continuation—of the Cheatham Dam.

Senator McClellan. That is correct, 6 million and 3 million.

Senator McKellar. And we got planning money. The committee was very gracious, and Senator McClelian was a member of that committee, and he and others were very gracious.

Senator McClellan. And planning money for the Carthage Dam.

Senator McKellar. That is right which, I think, was very generous in the Senate, and I just hope and pray that we can induce the House to accept that.

It will help us tremendously in the production of electricity if we can get this bill through, which authorizes the engineers to include construction, operation, and maintenance under the direction of the Secretary of the Army, supervision of the Chief of Engineers of hydroelectric power-generating facilities. That is what this bill is for.

Mr. Chairman, it is not included in the original act and, therefore, we have got to pass this bill to provide the necessary authority.

Senator McClellan. This is a modification; this is to modify and revise the original authorization.

Senator McKellar. Well, it is to add to it because in the original authorization act it did not provide for the building of facilities for the generation of electric power.

Senator McClellan. How much added cost is involved here over the original?

Senator McKellar. Just the cost of the machinery, it would be considerable.

Senator McClellan. Won't there have to be a modification of the plans for the dam?

Senator McKellar. No, sir; I think not.

Senator McClellan. No modification of construction?

Senator McKellar. What we want to do is to finish those two dams, Old Hickory and the other one, and install the machinery by the time they do finish. That is why it is very, very important, and a number of witnesses are here from Tennessee.

Will one of you bring me the list of them so that I can introduce them at this point? Thank you.

Mr. Dyer comes first. He is at the top of the list here, so we will just take him in that way.

Senator McClellan. Would you like to have the engineers testify first?

Senator McKellar. I believe I would; yes, sir. Wait one minute, Mr. Dyer, and we will hear from the Engineers.

STATEMENT OF BRIG. GEN. C. H. CHORPENING, ASSISTANT CHIEF OF ENGINEERS

General Chorpening. Mr. Chairman, we have with us today Colonel Walsh who is the district engineer in Nashville, and he will make the detailed presentation of the projects, if that is satisfactory to the chairman.

Senator McKellar. We will call you a little later then, Mr. Dyer, because there are some questions I wanted to ask of you.

I believe it would be better for you to sit right there where all of us can see you; my sight is bad.

Senator McCLELLAN. Senator McKellar, immediately preceding his testimony I would like to introduce in the record the report of the Secretary of the Army on this project.

Senator McKELLAR. Thank you, sir.

Senator McCLELLAN. And also the report from the Bureau of the Budget. Let those be placed in the record.

In addition to that we will insert in the record a letter from the Secretary of the Army and a letter from the Director of the Budget with respect to the lower Cumberland Dam.

(The documents referred to are as follows:)

MAY 22, 1951.

Hon. DENNIS CHAVEZ,
Chairman, Committee on Public Works,
United States Senate.

DEAR SENATOR CHAVEZ: Reference is made to your request for the views of this Department concerning S. 98, Eighty-second Congress, a bill to authorize the construction, operation, and maintenance of the lower Cumberland Dam and Reservoir on the Cumberland River in Kentucky and Tennessee, for navigation, flood control, hydroelectric power, and other purposes.

The Department of the Army favors the above-mentioned bill.

The purpose of the bill, S. 98, is to modify the comprehensive plan of improvement of the Cumberland River and tributaries for navigation, flood control, power development, and other purposes, as authorized by the River and Harbor Act of July 24, 1946, so as to provide for the construction of the lower Cumberland Dam and Reservoir in lieu of the presently authorized Kuttawa (Eureka) and Dover Dams. The bill provides that the Cumberland Dam shall have a normal operating pool at approximately elevation 355, with top of flood-control pool at approximately elevation 375. It further provides that the project may include a canal between lower Cumberland Reservoir and the Kentucky Reservoir on the Tennessee River for navigation and to permit best possible utilization of the flow of the Cumberland and Tennessee Rivers if found necessary or advisable.

The presently authorized Kuttawa and Dover Dams are for the primary purpose of providing urgently needed navigation improvements on the Cumberland River downstream from Nashville, Tenn. The lower Cumberland Dam and Reservoir would provide for the utilization of this section of the Cumberland River for all desirable purposes including navigation, flood control, and hydroelectric power production.

The lower Cumberland Dam and Reservoir would create a slackwater navigation pool upstream to the Cheatham Dam which is now under construction. Only two lockages would be required for navigation below Nashville and would result in additional navigation benefits over those obtainable with the Kuttawa and Dover Dams. The lower Cumberland project dam site is located on the lower reach of the river at a point where the runoff from 97 percent of the entire Cumberland watershed can be controlled to reduce the crests of great floods on the lower Ohio and Mississippi Rivers. Needed hydroelectric capacity of 130,000 kilowatts would also be provided. The need for additional power in Tennessee and surrounding region is increasing at a rapid rate and the power from the lower Cumberland project can be used as soon as it is made available.

The benefits to be expected from the lower Cumberland project would be substantially greater than the costs. This conclusion is based upon a review of the earlier studies by the Corps of Engineers on this project and is further substantiated by the recent report prepared by the Tennessee Valley Authority on the development of the lower Cumberland River below Nashville, Tenn.

A similar report on H. R. 9866, Eighty-first Congress, an identical bill, has been coordinated among the Department and Boards in the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Bureau of the Budget advises that, while there is no objection to the submission of this report, the Bureau cannot advise as to the relationship of the proposal to the program of the President without a detailed project report, including comments thereon from affected States, as is more particularly referred to in the Bureau's letter to you of May 17, 1951.

Sincerely yours,

FRANK PACE, Jr., *Secretary of the Army.*

MAY 9, 1951.

Hon. DENNIS CHAVEZ,
Chairman, Committee on Public Works,
United States Senate.

DEAR SENATOR CHAVEZ: Reference is made to your request for the views of this Department concerning S. 97, Eighty-second Congress, a bill to authorize the construction, operation, and maintenance of facilities for generating hydroelectric power at the Cheatham Dam on the Cumberland River in Kentucky.

The Department of the Army favors the above-mentioned bill.

The purpose of the bill, S. 97, is to modify the comprehensive plan of improvement of the Cumberland River and tributaries for navigation, flood control, power development, and other purposes, as authorized by the River and Harbor Act of July 24, 1946, so as to provide for the construction of power-generating facilities at the Cheatham Dam.

The Cheatham Dam is under construction as a part of an urgently needed improvement of the Cumberland River for navigation. The dam will create a head of approximately 30 feet. This head and the regulation of the stream flow by upstream reservoir projects makes possible the economical development of hydroelectric power at the Cheatham Dam. Accordingly, provisions are being made for the future addition of hydroelectric power facilities at this dam. The need for additional power in Tennessee and surrounding region is increasing at a rapid rate and the power from the Cheatham Dam can be used as soon as it is made available.

Preliminary, but rather thorough studies made by the Corps of Engineers in connection with the design of the navigation facilities at Cheatham show that the benefits from the power which can be developed would be substantially greater than the costs.

Attention is invited to the fact that the Cheatham Dam is located in the State of Tennessee. The bill should, therefore, be corrected by changing the word "Kentucky" to "Tennessee" in both the title and the body of the bill.

A similar report on H. R. 9867, Eighty-first Congress, an identical bill, has been coordinated among the departments and boards in the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Bureau of the Budget advises that there is no objection to the submission of this report.

Sincerely yours,

FRANK PACE, JR., *Secretary of the Army.*

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., May 4, 1951.

Hon. DENNIS CHAVEZ,
Chairman, Senate Committee on Public Works,
Senate Office Building, Washington, D. C.

MY DEAR SENATOR CHAVEZ: This is in reply to your request for the views of the Bureau of the Budget on S. 97, to authorize the construction, operation, and maintenance of facilities for generating hydroelectric power at the Cheatham Dam on the Cumberland River in Kentucky.

Attention is invited to the fact that Cheatham Dam is located in the State of Tennessee. The bill should, therefore, be corrected by changing the word "Kentucky" to "Tennessee" in both the title and the body of the bill.

As you know Cheatham Dam is now under construction and when completed will provide needed flood control and navigation benefits. At the time this project was authorized no provision was made for the installation of power generating facilities at the site. However, in the light of the potentially critical power shortage in this area it would seem desirable that the power generating facilities be authorized at this time.

Accordingly, you are advised that enactment of this legislation would be without objection from the standpoint of the program of the President.

Sincerely yours,

F. J. LAWTON, *Director.*

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., May 17, 1951.

Hon. DENNIS CHAVEZ,
Chairman, Committee on Public Works,
Senate Office Building, Washington 25, D. C.

MY DEAR SENATOR CHAVEZ: This is to reply to your request for the views of the Bureau of the Budget on S. 98, to authorize the construction, operation, and maintenance of Lower Cumberland Dam and Reservoir on the Cumberland River in Kentucky and Tennessee, for navigation, flood control, hydroelectric power, and other purposes.

This bill would modify the existing project for the Cumberland River as authorized by the River and Harbor Act approved July 24, 1946, on the basis of reports contained in House Document 761, Seventy-ninth Congress, second session. These reports indicate that a proposal similar to that contemplated in the bill was studied at that time by the Corps of Engineers but, presumably in view of strong local opposition thereto, was not recommended for authorization. The Tennessee Valley Authority recently made a reconnaissance of the area and submitted a report which also included a discussion in general terms of a proposal similar to that contemplated in the bill. While there has been some preliminary study of the area, there has not been prepared a detailed project report such as those usually prepared for determining the justification for such work and for securing authorization of an improvement.

As you know, the Congress, after much deliberation, established in the 1944 Flood Control Act certain procedures for the development and consideration of reports on proposed navigation, flood control, and other water conservation projects. It is believed that these generally accepted practices which include provision for the transmission of the detailed proposals of the Corps of Engineers to affected States for comment should not be departed from except in cases of emergency.

In accordance with the procedures established under Executive Order 9384, dated October 4, 1943, all departments and establishments of the executive branch are required to submit proposals of this nature to the Bureau of the Budget for determination as to their relationship to the program of the President. It is essential in making such a determination that the Bureau of the Budget have available for review and analysis a project report containing adequate substantiating information regarding the engineering and economic feasibility of the work including a complete description of the plan of improvement, detailed estimates of costs and benefits, and sufficient other pertinent information, including the views of the affected States and other interested Federal agencies, necessary for a complete understanding as to the justification and necessity for the work.

In view of the above and in the absence of a detailed project report containing data for proper evaluation of the merits of the improvement, I regret to advise you that no commitment can be made at this time as to the relationship of the proposal to the program of the President.

Sincerely yours,

F. J. LAWTON, *Director.*

Senator MCCLELLAN. I would like to read the closing paragraph of the letter from the Bureau of the Budget on the lower Cumberland Dam, and I quote:

> In view of the above and in the absence of a detailed project report containing data for proper evaluation of the merits of the improvement, I regret to advise you that no commitment can be made at this time as to the relationship of the proposal to the program of the President.

I have not read the entire letter, but apparently the Bureau of the Budget is lacking some information and data that it would require before it could make any commitment as to whether this particular project conforms to the program of the President.

Senator MCKELLAR. I think, Mr. Chairman, that in the supplemental budget the President sent down he specifically mentioned the Cheatham Dam.

Senator MCCLELLAN. They have approved that but this is the lower Cumberland Dam I am speaking of at the moment, and this is

a letter dated May 17, 1951, so I do not know. There may have been some change. That may have been cleared up in the meantime. Do you know whether that is so or not?

Colonel WALSH. No, sir; I do not know of any change.

Senator MCCLELLAN. I just noticed that, which will be in the record.

Senator MCKELLAR. I think it ought to go into the record.

Senator MCCLELLAN. If there is anything to clarify it and show any change in the situation that can be developed.

General CHORPENING. I can make a statement on that, sir.

Senator MCCLELLAN. All right, General, we will be glad to have you make a statement on that.

General CHORPENING. That comment of the Bureau of the Budget is based on the requirement that a report be made by the Corps of Engineers, submitted to the affected States and other Federal agencies, approved by the Secretary of the Army and finally cleared by the Bureau of the Budget, all in accordance with law and administrative procedure.

At this time, in accordance with a resolution from this committee, such a report is in process of preparation and will be available within the next several months. The Corps of Engineers will give full consideration to this proposal.

Senator MCKELLAR. I am glad to hear it.

Senator KEFAUVER. Mr. Chairman?

Senator MCCLELLAN. Senator Kefauver.

STATEMENT OF HON. ESTES KEFAUVER, A UNITED STATES SENATOR FROM THE STATE OF TENNESSEE

Senator KEFAUVER. I do not want to interrupt, but I am on the Armed Services Committee, and we were marking up the European aid bill.

Senator MCCLELLAN. Would you like to make your statement then so that you can get back to the committee?

Senator MCKELLAR. Colonel Walsh, you just wait until Senator Kefauver makes his statement.

Senator MCCLELLAN. Senator Kefauver.

Senator KEFAUVER. Mr. Chairman and gentlemen of the committee I wish to join with Senator McKellar in strongly urging the approval of these two bills which have been filed by him and which are before your committee.

These measures provide, of course, for the construction of a high dam at the lower Cumberland, as recommended by the TVA, and the conversion of the Cheatham Dam from a navigation dam only to a multipurpose dam.

The bills provide for the construction of the dam by the Corps of Engineers, and I wish to say that I approve this plan.

The important thing now is to get the dams authorized and built by whatever agency can build them. The matter of operation is another question, and at the proper time later on I shall ask this committee to consider the proposal to have the dams operated by the TVA, but that is not before the committee now.

As set forth by Mr. Clapp in his report the important thing to the region and to the Nation is that the Cumberland River be developed

so as to get not only flood control and navigation, but the greatest possible power potential for this important region of the country.

This committee has, I am sure, the benefit of the studies made by the TVA, in response to the memorandum request of the President, which show the unique advantages of the Cumberland River. These include a unique geographic feature: The Cumberland in the vicinity of Grand Rivers, Ky., is less than 2 miles from the eastern shore of the Kentucky Reservoir which forms a part of the TVA system on the Tennessee River.

For the creation of a reservoir on the lower Cumberland, operating at the same pool levels as the Kentucky Reservoir, the distance between the two reservoirs would be reduced to only about one-half of a mile at the closest point.

This situation produces a unique engineering opportunity, as pointed out in the TVA's study of September 1950.

At this point an open canal only one-half mile long can be constructed and tie together the Cumberland and the Tennessee Rivers to the great advantage of the shippers.

With the canal in operation the storage capacity of the Kentucky and Lower Cumberland Reservoirs and the flow of both rivers can be utilized to the best possible advantage by passing water from one river to the other through the canal, with the corresponding benefits to flood control and power generation.

I should like to see this canal built. The construction of the dams, as authorized by this bill before you this morning, will leave that as a possibility. That, however, is something that can be considered later on after the dams have been built.

As the committee considers these two bills, may I urge that you look at them in all their purposes, namely, flood control, power, and navigation.

As we learned in the recent disastrous Kansas floods, local levee protection is almost useless unless there is control of the head waters. TVA is able to control the head waters on the Tennessee and to reduce the flood crest at Cairo on the Mississippi from 2 to 4 feet, depending on the water level and, of course, that is a great substantial help to flood control conditions up the Mississippi and the Missouri.

This development of the Cumberland, together with the dams that have already been built or are under construction on the upper Cumberland, will make the same kind of situation possible, and reduce the flood crest on the Ohio and Mississippi.

Power needs cannot be overemphasized, as has been so well stated by Senator McKellar. The Tennessee Valley has proved itself an arsenal of democracy during the past war because of the power of the TVA, and it has been a great national benefit from the military viewpoint, among other things.

TVA power turns the wheels that produce atomic energy. The TVA study shows that a high dam at the mouth of the Cumberland can produce at least 130,000 kilowatts of much needed hydroelectric power.

Again defense is making substantial demands on the valley, and there is no source of power available to it except that produced by the TVA and produced on the Cumberland by the Corps of Engineers.

To mention just a few of the really big drains on power, consider the Air Force wind tunnel at Tullahoma for testing supersonic planes

which the President dedicated a few weeks ago; the great Oak Ridge developments; the Alcoa Aluminum Works; the new atomic energy plant in Senator Clements' and Senator Underwood's state at Paducah; and many defense plants in Alabama, and the cities of Tennessee, Kentucky, and North Carolina where the industries are working day and night producing many, many things for the preparedness program.

I have already mentioned the most unique advantage to navigation of this development, the possibility of the canal between the two rivers, but even without the canal there are great advantages, particularly in navigation on the Cumberland, which is of great importance to Nashville, which gets most of its oil and gas by barge on the river.

Of course, you realize that these are just the highlights of the great possibilities inherent in the measure that you are studying today. Studies available to you go much more thoroughly into the economic justification of this work.

I should like to say that when you consider these bills, I hope you will consider them also on the basis of what they mean to the life of the people of the region. Power is necessary in our life today.

The farmer with indoor plumbing, electric milking machines, electric hay driers, refrigeration, has come to depend upon power, and it helps the business of the entire nation because most of these things were made in northern and eastern cities.

As the defense and business demands use up more and more of the power we should also think of the farmer who has got to have power also on a modern farm, and who is himself a defense producer, for he feeds us, and nothing is more vital.

Mr. Chairman, I am happy to join with Senator McKellar, and I think also the Corps of Engineers, in urging that this be done.

As I understand it, back many years ago in 1939 or 1940, the Corps of Engineers felt that this was the way this dam should be built and then there was some modification of the plans because of the insistence of the landowners that it might inundate a good deal of the land, but I believe that sentiment of the landowners has now been entirely changed, because they realize that there is this which is needed for defense or for the general development of the country, and for the region, and they are not going to quibble about some of the land that they may use and that since that change in attitude has come about, I believe and I hope, the Corps of Engineers also sees it that way.

It is important, as I see it, that we develop to the greatest extent possible that great natural resources which God gave us. One of the greatest is the power of falling waters.

I believe this project is economically feasible and will pay for itself, the power part of it, in a period of, I believe, 40 years, so I do hope for defense purposes and for the general development of the country that the committee will approve these two bills.

Senator McCLELLAN. Thank you very much, Senator Kefauver.

Senator KEFAUVER. Thank you very much, Senator McClellan and Senator McKellar.

Senator McCLELLAN. Are there any questions from the members of the committee? Thank you very much. We were glad to hear you so that you could get to your committee this morning.

Senator DWORSHAK. Senator, has the budget or the Defense Electric Power Administration taken any position on this proposed development?

Senator MCCLELLAN. The Bureau of the Budget—I just filed their report.

Senator KEFAUVER. There is a report from the Bureau of the Budget, and my understanding was they approved it.

Senator MCCLELLAN. That has been filed for the record.

Senator KEFAUVER. I think everybody who has studied the problem feels that Senator McKellar's proposal is the way it should be developed.

Senator DWORSHAK. You do not know what the attitude of the Defense Electric Power Administration is?

Senator KEFAUVER. I frankly do not know, but knowing they appreciate good things, I would say they would be strongly for it, but I am just judging by what I think they ought to do.

Senator DWORSHAK. I agree with you that when they have a meritorious project involving power they should be responsive and approve it, but that record shows that they have been very reluctant to approve many proposed projects in other sections of the country, and I was just inquisitive to know whether you had surmounted any potential opposition from that source.

Senator KEFAUVER. I know how interested the Senator is in this kind of development, but Senator McKellar, I am sure, would be better able to tell their position than I.

Senator DWORSHAK. Thank you.

Senator KEFAUVER. Thank you, Senator. I have seen some of the great dams in his State.

Senator MCCLELLAN. Thank you very much.

All right, Colonel Walsh, we will be glad to hear from the Corps of Engineers.

STATEMENT OF COL. HENRY WALSH, DISTRICT ENGINEER, NASHVILLE, TENN., UNITED STATES ARMY

Colonel WALSH. Mr. Chairman and gentlemen, I am appearing before you today with respect to bills for authorization of the lower Cumberland Reservoir project, and for the installation of power generating facilities in the Cheatham lock and dam which is being constructed in the lower Cumberland River Basin under the direction of the Corps of Engineers.

Before I give you details on those projects, however, I shall appreciate it if you will permit me to describe briefly the basic plan for the development of the Cumberland River Basin.

Senator MCCLELLAN. All right. Now, that is the plan that you want to modify here by S. 98, is it not?

Colonel WALSH. That is correct, sir.

Senator MCCLELLAN. All right.

Colonel WALSH. I believe by doing so you will be better informed as to the problems to be met.

The Cumberland River has been under study for many years under directives issued by the Congress, generally, however, until recent years in the primary interests of navigation.

Our most recent study of the basin, envisioning the coordinated development of the water resources in the interests of navigation, flood control, hydroelectric power, and other purposes, was presented to the Congress in 1946, and published as House Document 761, Seventy-ninth Congress, second session.

The plan I am about to describe is contained in that document, modified to some degree to take into account present-day conditions and further studies made since the original report was submitted.

I read this from a prepared brief that I got together in Nashville.

The remainder, sir, I would like to present for admission to the record, and then go to the large map and start describing this project.

Senator McCLELLAN. That may be filed. I do not think it is necessary to print it. It may be filed for reference.

Colonel WALSH. Thank you.

Senator McCLELLAN. You may proceed.

Colonel WALSH. I would like to draw your attention to this map which is also in your book in front of you. It is a relief map showing the watershed of the Cumberland River Basin.

The scheme or plan represents six high head projects.

Senator McCLELLAN. Six high head what?

Colonel WALSH. Projects, sir.

Senator CARLSON. Give us the area, Colonel, will you, please, of this Cumberland Basin area?

Colonel WALSH. Well, the basin starts up in Kentucky right near Harlan County and meanders down through Kentucky to Celina, Tenn., carries through and past Nashville, then goes back into Kentucky again.

Senator CARLSON. Could you give the area in square miles or acres?

Colonel WALSH. I do not have it with me just now, but I will provide that for the record.

(The information requested is as follows:)

The area of the Cumberland River Basin is 17,720 square miles, of which 10,160 square miles is in Tennessee and 7,560 is in Kentucky.

Mr. SNEED. Seventeen thousand square miles.

Senator CARLSON. Yes.

Senator McCLELLAN. You mean the watershed up there?

Colonel WALSH. You will notice it is very mountainous country and therefore it is a fine basin for the collection of water and, naturally, in this development we must look toward the most feasible area to impound that water.

Senator McKELLAR. How many dams have been completed, Colonel?

Colonel WALSH. Sir, I was going to get to that a little later, if the Senator does not mind.

Senator McKELLAR. Yes.

Colonel WALSH. And, as I say, there are six high head dams in the plan. One is Wolf Creek on the main stem, which is located in Kentucky near the town of Jamestown.

Then we have five on the tributaries [indicating on map]: One, Dale Hollow on the Obey River; the next one is Center Hill, and the next one is Stewarts Ferry, and the next one Rossview, and the next one is Three Islands Dam.

The Center Hill Dam is located on Caney Fork. Coming back to the question, sir, that the Senator asked, the Wolf Creek Dam was completed around 1949 for flood control—or, we will say 1950, the first part of 1950; and at the present time it is fully completed as to the dam proper. The powerhouse is now under construction and it consists of six units of 45,000 kilowatts, and the first unit goes on the line within the next 45 days.

The next dam, which is Dale Hollow is a high dam, so-called, and that was completed for flood control in 1943. I may be a little bit out on my dates, but it is a matter of record.

The power installation consists at the present time of two 18,000 kilowatt units with the third now under contract.

The Center Hill Dam is completed, and the first unit went on the line just 12 days before Christmas of last year. The second unit went on the line in January of this year, and the third unit was on the line in March. Those are 45,000 kilowatt units. The project is practically completed with the little finishing touches within the powerhouse.

Relative to Stewarts Ferry, the plans for the dam have been completed, and the contract could be awarded within 30 days if money was available.

In reference to Rossview, that is in the planning stage, and the same thing for Three Islands Dam.

The Wolf Creek is confined to flood control and power. Dale Hollow is flood control and power; Center Hill is flood control and power; Stewarts Ferry is flood control and power; Rossview is purely flood control; Three Islands is flood control and power.

The remainder of the dams are low head dams, or what we call low dams. The first is Celina Dam, on which some planning has been done. When it is completed that will provide flood control and power, approximately 65,000 kilowatts.

The next one of the low dams coming down is Carthage—that is for flood control and power, and will produce 92,000 kilowatts.

Coming along down the river again is Old Hickory, which we discussed this morning, which is navigation, flood control and power, approximately 100,000 kilowatts.

Coming further down the river is Cheatham. Cheatham is navigation and power, approximately 36,000 kilowatts.

Senator McCLELLAN. When you say it is navigation and power, was it originally planned for power?

Colonel WALSH. No, sir; it was not. At that time in the authorized plan it was for navigation.

Senator McCLELLAN. You are seeking now to have the plan modified so as to authorize power.

Colonel WALSH. I was coming to that, sir, just a little later. I am talking about the plan as presently authorized. Going down the river was the Dover Lock and Dam which was for navigation, and Eureka—what we call Kuttawa at the present time.

Before the subcommittee today is the plan to change the authorization to a high dam at the lower part of the Cumberland which will produce 130,000 kilowatts.

Senator McCLELLAN. At what point is this Cheatham Dam of the lower Cumberland?

Colonel WALSH. The Cheatham Dam is approximately 150 miles above the mouth, and the lower Cumberland Dam is 30 miles above the mouth.

Senator MCCLELLAN. Is that between the one you have there and the mouth?

Colonel WALSH. Here it is, sir [indicating].

Senator MCCLELLAN. That is the site of it, the location?

Colonel WALSH. That is the site of the lower Cumberland Dam, yes, sir; and here is that interconnecting canal between the Tennessee and the Cumberland. This dam will produce 130,000 kilowatts.

Therefore, eliminating Dover and Kuttawa——

Senator MCCLELLAN. How much more will Cheatham cost than the Dover and the Kuttawa combined?

Colonel WALSH. I do not have those figures with me at the present time, but I can produce those for the record.

Senator MCCLELLAN. Will you supply those for the record?

Colonel WALSH. Yes, sir.

(The information referred to is as follows:)

Based on 1950 price levels the proposed lower Cumberland Dam and Reservoir, which will provide navigation, flood control, and power benefits, is estimated to cost $100,500,000 more than Kuttawa and Dover Dams which would only serve navigation.

Senator MCCLELLAN. As I understand, Dover and Kuttawa were only flood control.

Colonel WALSH. Only navigation, sir.

Senator MCCLELLAN. And navigation.

Colonel WALSH. Yes, sir.

Senator MCCLELLAN. Neither have any power in them.

Colonel WALSH. That is correct, sir.

Senator MCCLELLAN. How will the Cheatham Dam contribute to flood control and navigation in comparison to the two that you are eliminating? Will you get as much? In other words, will it be just as much flood-control and navigation benefits in the Cheatham Dam as there would be in the other two, plus the power?

Colonel WALSH. We have here a diagram, sir, which will show that plan as we go along.

Senator MCCLELLAN. I am trying to get the record completely clear as to the purpose of this change, and whether the change is going to be at the sacrifice of flood control or navigation or if those two benefits are retained, and you are just adding to those benefits.

Colonel WALSH. We are retaining the navigation benefits in the whole plan, sir, and adding other benefits.

Senator MCCLELLAN. For power.

Colonel WALSH. For power and flood control, sir, which is not provided in the present authorization.

Senator MCCLELLAN. If we can show what the original cost is between the original two dams and the one dam you estimated—if you can measure the difference in cost as to what power benefits, what the power values are, the cost of it at least, that would be helpful.

Colonel WALSH. Yes, sir; we can produce that for the record today, and we will forward that in to you, sir.

Senator MCCLELLAN. All right.

(The information referred to is as follows:)

The difference in cost, based on 1950 price levels, is $100,500,000. The additional benefits are $2,000,000 a year for flood control and $4,183,000 a year for power.

Senator DWORSHAK. The record shows, Mr. Chairman, a little more than $100 million difference.

Senator MCCLELLAN. In cost. Well, you can get those figures down today.

Colonel WALSH. Yes, sir; we can get those.

I would like to draw your attention to this other map that we have on the opposite side of the room.

Senator MCCLELLAN. Is that the same area?

Colonel WALSH. No, sir. This is the TVA distribution area, and where the power goes to, and where this power is needed for the defense establishments or for defense work.

Here is the Cumberland which meanders in from Kentucky and through Tennessee and back into Kentucky again. I would like to show you some of the locations of these defense projects at the present time.

Right here near the mouth of the Tennessee River we have the new atomic energy plant that is being built. Here we have Fort Campbell, which is increasing its capacity. I think the Armed Services Committee could give you a little more information as to the increased size of that.

We have down here the Tullahoma project, the research center for the Air Force. We go over in this territory and we also have the Atomic Energy Commission there at Oak Ridge.

At the northeast part of the State we go into the Holston Ordnance Works which at the present time are being increased and we are doing a rehabilitation job on that.

Down further we have Redstone Arsenal that is running to full capacity providing ammunition and projectiles, including guided missiles.

Over in Alcoa located just on the other side of Knoxville is the aluminum plant of the Aluminum Co. of America, which takes the ore and manufactures aluminum and also fabricates shapes.

In addition to that we also have another aluminum company down here located in Florence, Ala.

I think a question may arise as to why this additional power is needed. I think there was an understanding that possibly there had been a little surplus power. I would like to bring some statistics to your attention, which I procured from the Nashville Electric Service, and I am using these statistics around Nashville as an example.

In 1946 there were 104 houses heated by electricity. In 1951, 5 years afterward, 13,000.

Since the inauguration of television, since September 1950, 22,000 television sets have been sold. In 1939 there were 14,000 electric ranges. In 1951 there are now 56,500.

In 1939 there were 3,600 electric hot water heaters. At the present time there are 37,000.

The kilowatt demand in 1940 was only 71,000. At the present time it is 284,000, an increase of four times over the 11 years.

The average residential consumption in Nashville today is 6,084 kilowatts; the national average is 2,100.

In the statement that is before you, you will see letters from the Federal Power Commission, TVA, and the Southeastern Power Administration showing the need for additional power in this area.

Senator DWORSHAK. Colonel, at that point can you tell us specifically what that additional power is needed for at this particular time?

Colonel WALSH. Yes, sir. That is needed for increased civilian and defense establishments. No. 1 is McGhee-Tyson Airfield; 2, the increase in Sewart Air Base; 3 is this $10 million plant that is being built by the National Carbide Corp.; and, in addition to that, a $5 million plant to be built by B. F. Goodrich Corp.

Senator DWORSHAK. It is essentially the result of expanded defense effort?

Colonel WALSH. That is correct, sir.

In addition there is the Arnold Engineering Development Center, which is a new defense installation—I do not know what the power usage will be. In fact, I do not think they have announced it at the present time, but it may run pretty well in the neighborhood of 1,500,000,000 kilowatt-hours annually. There is also the expansion of the atomic energy plant.

I would like to give you as an illustration, the Aluminum Co. of America, which is located right near Knoxville. As you know, they produce some of their own power. In addition to that, the TVA sold to them 1½ billion kilowatt-hours last year.

The Reynolds Metals—that is another aluminum company that is located in Alabama, near Florence—used 1 billion kilowatt-hours.

The phosphate production, as you know, in central Tennessee, which has quite an economic value in the State, used 1¾ billion kilowatt-hours last year.

Oak Ridge at the present time is consuming 2 billion kilowatt-hours a year which is in addition to their own production at their plant.

Redstone Arsenal, of course, which was shut down for quite a period, last year used 100 million kilowatt-hours, and the different ferro-alloy manufacturing plants are consuming at the present time 1 billion kilowatt-hours a year.

Senator DWORSHAK. Which plants of the Atomic Energy Commission did you refer to?

Colonel WALSH. The plant at Oak Ridge, sir. Of course, the other one is not completed at the present time.

Going along, if you want to know the present power capacity——

Senator CLEMENTS. Colonel Walsh, before you get to that, you mentioned National Carbide and B. F. Goodrich with respect to the plants they have under construction——

Colonel WALSH. Yes, sir.

Senator CLEMENTS (continuing). Near Calvert City.

Colonel WALSH. Yes, sir.

Senator CLEMENTS. Is it not a fact that Pittsburgh Metallurgical and Pennsylvania Salt Co. have expansions there at the present time?

Colonel WALSH. That is right.

Senator CLEMENTS. Both are large users of electricity.

Colonel WALSH. That is correct, sir. That is a fundamental requirement in their product.

Senator MCKELLAR. Have not the cities used TVA power instead of making their own power?

Colonel WALSH. Correct, sir.

Senator McKellar. Memphis has, I know.

Colonel Walsh. Yes, sir.

Senator McKellar. I am not sure, but I think Nashville has.

Colonel Walsh. Yes, sir; all the cities.

Senator McKellar. And Chattanooga and Knoxville and all of the smaller cities in the area.

Colonel Walsh. They have set up co-ops which buy power from TVA and do not manufacture power at the present time.

I would like to move then to flood control.

Senator Dworshak. Are you leaving the power phase now?

Colonel Walsh. Yes, sir.

Senator Dworshak. Could I ask one question at the present time? Roughly the difference in cost between the two small dams and the one large dam is $100 million, and the power installation would total 130,000 kilowatts. Would that not be rather an expensive cost, $100 million, to bring in 130,000 kilowatts of power?

Colonel Walsh. Well, I think you have got to add the navigation benefits to that, and also flood-control benefits.

Senator McClellan. That is in addition.

Colonel Walsh. That is in addition to the power, sir.

Senator Dworshak. What benefits would be derived from the two small dams?

Colonel Walsh. Navigation benefits only, sir.

Senator Dworshak. But no power.

Colonel Walsh. No power and no flood control, sir. Purely for navigation for a 9-foot-channel depth.

Senator Dworshak. Will the composite benefits from flood control and navigation under the proposed new dam far exceed the comparable benefits accruing from the two smaller dams?

Colonel Walsh. If I remember correctly, sir, the additional benefits are about $2,000,000 a year from flood control and more than $4,000,000 a year from power. The navigation benefit is the same, or about $3,100,000 a year.

Senator Dworshak. Do you break down that $100 million to show what benefits it covers?

Colonel Walsh. It covers the flood-control and power benefits, sir; there is no breakdown between them.

If you could turn to chart 1–A in my prepared statement it will show you the actual fall of the river and also what is under construction, authorized, and what is proposed for authorization. It will also show you the lower dams which will be replaced.

With regard to the flood-control aspects, we have documented records for nearly a hundred years at Nashville, the primary point of damage within the Cumberland Basin. I have recently completed an up-to-date study of flood conditions, and without reservoir protection, I found that the city would have been liable for $6 million damage upon a recurrence of a flood similar to that of 1926–27, the greatest of record.

Senator McClellan. Do you have navigation up the Cumberland River?

Colonel Walsh. The river is used just as far as Carthage at the present time, but the project goes all the way up to Celina and above.

Senator McClellan. Are each of these dams with locks in them for navigation?

Colonel WALSH. The only ones, sir, that will have locks will be the Lower Cumberland, Cheatham, and Old Hickory.

Senator MCCLELLAN. So you only have navigation up to Carthage?

Colonel WALSH. That is correct, sir, with respect to present traffic.

Of course, we have one flood danger point at the present time which would be corrected by Stewarts Ferry. As I stated before, Stones River is just like the spout of a kettle. We have the lid on the main stream, but we have the spout sticking outside of the kettle, and if that is not controlled it would cause quite a lot of damage at Nashville at the present time.

With the completion of this project the residual flood damage would be approximately $10,000, which would be the flooding of some lowlands and bottom lands.

We, in our calculations based on this flood survey, find that we have saved approximately $2½ million in flood damage since construction of the three existing reservoirs.

I would like to go into the navigation features of this project. As you know, the present locks are all obsolete, built as much as 47 years ago, and the majority of them are operated by manpower, by using a capstan with a rod and two men propelling it.

It is very interesting to note that in the last 10 or 15 years the increase of traffic on the Cumberland, which is shown in the statement as being 1,500,000 tons, is actually well over 1,600,000 tons on the basis of new statistics that were given to me just before I came down here. The increase is shown in the back of my prepared statement. In 1946 there were approximately 1,000,000 tons; 1947 around 1,200,000 tons; 1948, 1,300,000 tons; 1949 around 1,500,000 tons, and now it has gone well over 1,600,000 tons.

It also shows you the breakdown between sand and gravel, petroleum products, steel and sulfur and miscellaneous.

Senator MCKELLAR. Largely carried on by barge lines, is it not?

Colonel WALSH. I beg pardon, sir?

Senator MCKELLAR. Largely carried in barges.

Colonel WALSH. That is correct, sir.

Just before I came down here there had been a one million pound delivery of metal on a new contract to Avco for metal products, and we understand that a shipment will be made approximately every 30 days.

Our present estimate shows that on the completion of this project, as far as navigation is concerned. it will afford benefits of $4,580,000 annually and, of course, a considerable savings in addition to that will accrue to the United States by the abandonment of all these other locks being replaced by the two. I think that shows also in the back of the statement, the manpower and the savings to the Government.

For instance, you will notice on chart 11, of the statement, which shows the improvement for 9-foot navigation, a typical tow, is shown in the left-hand corner that represents the operation of the present lock with the facilities capable of only handling one barge.

The man-hours alone and the maintenance and operation costs are reduced from 174,720 man hours to 58,240 man hours. The reduction in maintenance and operation cost is from $558,000 to $220,000.

The most important thing is the lockage time. If you will notice we have 14,280 tow-hours of lockage time, which will be reduced to 230 hours.

The comparative cost to the navigation people will be reduced from $8,050,000 to $3,470,000 per year.

In addition to that, there are other features which are not credited to this project, one of which is recreation. Of course, that is not taken into consideration in the economic analysis. I think I have some statistics that I put in the back of my own copy of my statement which show the recreation benefits that have accrued, which are not taken into consideration in this project.

Last year there were eight million tourists who spent nearly $400 million in Tennessee. There were only 37,000 fishing licenses sold in 1946, and now there are 147,000 fishing licenses.

Statistics from the Bureau of Public Information of the State of Tennessee show that $6,000,000 were spent by out-of-State residents for fishing.

I think, Mr. Chairman, that about covers my presentation.

Senator McCLELLAN. Any questions, gentlemen?

Senator DWORSHAK. Yes. To summarize, Colonel, will you tell us on this differential of 100 million, how much additional occasion there may be for flood control and navigation, before you place the final figure on power?

Colonel WALSH. Sir, I can give you that, and I will present it to you for the record.

Senator DWORSHAK. You cannot estimate it?

Colonel WALSH. Not offhand.

(The information referred to is as follows:)

The estimated cost of the lower Cumberland Dam is $130,000,000, and the cost of the Dover and Kuttawa Dams is $29,500,000 a difference of $100,500,000. The additional benifits are $2,000,000 for flood control and $4,183,000 for power. The annual navigation benefits are estimated at $3,114,000.

Senator McKELLAR. When you finish the dam, the one at Dale Hollow and Center Hill and other places, you then turn the distribution of the power over to the TVA, do you not?

Colonel WALSH. Correct, sir.

Senator McKELLAR. Yes, sir.

Colonel WALSH. Of course, that is channeled through the TVA——

Senator McKELLAR. Network.

Colonel WALSH. That is correct, sir.

Senator McKELLAR. They have a network and the engineers do not have a network.

Colonel WALSH. Correct.

Senator McKELLAR. And so in the interests of economy and in the interests of a larger distribution, you turn the power over to the TVA.

Colonel WALSH. Right at the bus bar at the power plants.

Senator DWORSHAK. You have no information concerning rates that are charged these large industrial users that you have mentioned in your testimony?

Colonel WALSH. No, sir; I do not. We do not get into distribution of the power.

Senator McKELLAR. The engineers do not have anything to do with the distribution.

Colonel WALSH. We sell our power for a block amount of money which is set by the Southeastern Power Administration of the Department of the Interior.

Senator DWORSHAK. What do you do with the proceeds?

Colonel WALSH. They go to the United States Treasury, sir. They do not come back to us.

General CHORPENING. Perhaps I should clarify that, Senator. The contracts for the sale of power from all our projects are made by the Department of the Interior. That is no responsibility of ours.

Senator DWORSHAK. I knew that, but I thought maybe you had some data available.

General CHORPENING. On completed projects we do know how much the revenue is from information given to us by other Government agencies.

Senator DWORSHAK. Thank you.

Senator CLEMENTS. Colonel Walsh, you mentioned the recreational value of these dams and TVA development. Do you have any figures on the number of people that visited any one of these larger dams during any given period?

Colonel WALSH. Yes, sir; I can give you that. I would say for last Labor Day just a year ago I happened to be at Dale Hollow and right in Cedar Hill, which is a fishing camp, there were approximately 17,000 people there that day. Of course, there is also a park there.

Senator CLEMENTS. The reason I ask you that is I saw some figures the other day on Kentucky Dam, where the figures are compiled by the State authorities and the Tennessee Valley Authority, and there were more than a million and a quarter people who visited Kentucky Dam during the year of 1950, and the figures this year are somewhat higher than they were a year ago.

Colonel WALSH. I would like to have this off the record.

Senator MCCLELLAN. All right, it may be off the record.

(Discussion off the record.)

Senator MCKELLAR. Colonel, there are some summer camps all over that mountainous country, and all are not a great distance from both the Cumberland and the Tennessee River.

Colonel WALSH. That is correct, sir. In addition we have cabin sites leased by the Government for 20 years, which stipulate a minimum type of development for cabins. Part of the rentals is used to compensate for the loss of taxes for inundation of land.

Senator MCCLELLAN. All right, thank you very much, Colonel.

I will make this statement for the record. General, this further report that you have to make on the Cumberland River was authorized by a resolution passed by this committee, I believe, July 31, this year.

General CHORPENING. Yes, sir.

Senator MCCLELLAN. In order to review the report of House Document 761 and bring it down to date.

General CHORPENING. Yes, sir.

Senator MCCLELLAN. And that is what you referred to a few moments ago.

General CHORPENING. That is correct, sir.

Senator MCKELLAR. Mr. Chairman, you said that this would be filed with the committee but not printed entirely. I am inclined to think it would be a very wise thing to print this report. I am just suggesting it. I am not a member of the committee.

Senator MCCLELLAN. Senator McKellar, I have no objection to having it printed in full.

Senator MCKELLAR. It is a very interesting document.

Senator McCLELLAN. I think most of the time the more to condense the record the more likely folks will read it.

Senator MCKELLAR. You are right about that.

Senator CLEMENTS. Mr. Chairman, there is some fine information in this statement.

Senator McCLELLAN. We will be very glad to have it printed in the record.

(The document referred to is as follows:)

STATEMENT OF COL. HENRY WALSH, DISTRICT ENGINEER, NASHVILLE DISTRICT CORPS OF ENGINEERS, UNITED STATES ARMY, WITH RESPECT TO AUTHORIZATION OF LOWER CUMBERLAND RESERVOIR PROJECT AND POWER FACILITIES IN CHEATHAM LOCK AND DAM, KY. AND TENN.

1. INTRODUCTION

Gentlemen, I am appearing before you today with respect to bills for authorization for the Lower Cumberland Reservoir project and for the installation of power generating facilities in the Cheatham Lock and Dam, which have been proposed for construction within the lower Cumberland River Basin under the direction of the Corps of Engineers. Before I give you details on those projects, however, I shall appreciate it if you will permit me to describe briefly the basic plan for the development of the Cumberland River Basin. I believe by doing so you will be better informed as to the problems to be met and the large amount of planning and thought that has gone into the proposals.

The Cumberland River has been under study for many years under directives issued by the Congress, generally, however, until recent years, in the primary interests of navigation. Our most recent study of the basin, envisioning the coordinated development of the water resources in the interests of navigation, flood control, hydroelectric power, and other purposes, was presented to the Congress in 1946 and published as House Document 761, Seventy-ninth Congress, second session. The plan I am about to describe is contained in that document, modified to some degree to take into account present-day conditions and further studies made since the original report was submitted.

2. BASIC PLAN FOR CUMBERLAND RIVER

If you will refer to the first chart (chart 1) I have placed before you, you will see that two types of projects are proposed: Six high-head projects, five on the tributaries and one on the upper main stream; and lower head works for the utilization of the main stream flows. The six large reservoirs are, as you will note, Wolf Creek on the upper river, Dale Hollow on the Obey River, Center Hill on the Caney Fork River, Stewarts Ferry on the Stones River, Three Islands on the Harpeth River, and Rossview on the Red River. These are projects essentially for the production of hydroelectric power, control of destructive flood waters, and other incidental uses. These projects were all authorized in the 1938 Flood Control Act and were included as component parts of the basic plan authorized by the River and Harbor Act of 1946.

Of these projects, Dale Hollow Dam was completed for flood control in 1943 and power generation initiated in 1948, with a second unit added in 1949. A third and final unit is to be installed shortly. Center Hill Dam was completed for flood control in 1946 and the last of its three generating units has just recently been placed in service. The Wolf Creek Dam is now complete, with power generation from the first of its six units to begin within the next month or so Stewarts Ferry Dam has been designed, but as yet, construction has not been initiated. Three Islands and Rossview have had some detailed planning, but as yet no construction has been undertaken.

On the main stream above Nashville, three relatively low head power and flood control projects are authorized, the uppermost of which is Celina; the next Carthage; and the next, Old Hickory. Navigation facilities are also proposed for installation in Old Hickory. Below Nashville, the authorized plan calls for the construction of three navigation only projects to accommodate the large amount of existing and prospective commerce on that reach of the river. Those projects are Cheatham, Dover, and Kuttawa, which was previously called Eureka. Of these, Cheatham is now under construction with funds made available in recent appropriation acts.

There are also four other projects on the headwaters above Wolf Creek, two on the South Fork of the Cumberland, and one each on the Laurel and Rockcastle Rivers, which appear to have great merits as additional components of the basic scheme. Further studies will be made of those projects as funds for this purpose are made available.

In the folder, I am also presenting on chart 1A essentially the same information as on the wall chart, except that profiles have been added which indicate the relative size of the impoundments and the complete utilization of the fall of the main stream.

I am appearing today in order to submit information on the modification of the plan for the lower Cumberland River by the substitution of a high head dam near the mouth of the stream, in lieu of the presently authorized Kuttawa and Dover projects. I shall also try to indicate the necessity for the inclusion of power-generating facilities in the Cheatham project.

3. POWER FEATURES

In this period of building up our defense potential, the early installation of power generating facilities to augment the critical reserves within the area is of paramount importance. For your understanding of the problem I have prepared the other display map before you, which is chart 2 in the folder, indicating the power service area of the Tennessee Valley Authority, into which the present output of the Cumberland River projects is channeled. This power is furnished the Tennessee Valley Authority, as you know, through the marketing facilities of the Southeastern Power Administration of the Department of the Interior.

I shall not attempt to burden you with a large amount of statistical data as to power needs. I have, however, included for the record a number of letters from the Tennessee Valley Authority, Federal Power Commission, and the Southeastern Power Administration, which I believe adequately shows the extreme urgency as to the need for installation of power facilities within this service area. These letters are as follows:

Federal Power Commission, December 1, 1950, to Chief of Engineers, Washington, D. C.

Tennessee Valley Authority, December 1, 1950, to Chief of Engineers, Washington, D. C.

Tennessee Valley Authority, December 7, 1950, to District Engineer, Nashville, Tenn.

Tennessee Valley Authority, May 1, 1951, to District Engineer, Nashville, Tenn.

Southeastern Power Administration, May 4, 1951, to District Engineer, Nashville, Tenn.

Tennessee Valley Authority, June 27, 1951, to Chief of Engineers, Washington, D. C.

Tennessee Valley Authority, July 25, 1951, to Chief of Engineers, Washington, D. C.

I would like to point out a limited number of pertinent statistics which might help you to evaluate the problem.

Since the close of World War II there has been a continuous rise in total power usage in the area. Chart 3 shows that since 1946 energy sales within the service area have increased from approximately 9 billion kilowatt-hours to approximately 16½ billion, or an increase of about 83 percent. A part of this consumption, of course, now goes to various municipalities and cooperatives for residential, commercial, and rural consumption. In addition to this, however, industries and installations directly connected with the current defense effort are requiring very large quantities of power.

As an illustration, the Aluminum Co. of America near Knoxville in east Tennessee purchased nearly 1½ billion kilowatt-hours in fiscal year 1951, in addition to some output from its own plants. This firm, as you know, engages in the reduction of aluminum ore and fabrication of aluminum products vital to defense uses. Likewise, the Reynolds Metals Co. at Florence, Ala., used nearly 1 billion kilowatt-hours for the same purposes.

Some of the major phosphate reserves of the Nation are found in the middle Tennessee area. Here the phosphate minerals are concentrated and reduced to elemental phosphorus and various phosphorus compounds for use in munitions and fertilizers. Consumption for those purposes amounted to something in the nature of 1¾ billion kilowatt-hours in fiscal year 1951. Production of ferroalloys consumed something less than a billion kilowatt-hours. The Atomic Energy Commission at Oak Ridge used over 2 billion kilowatt-hours in addition to its own production. Redstone Arsenal near Huntsville, Ala., used over 100

million kilowatt-hours in connection with production of chemicals and in its research program on guided missiles and rockets. Copper and sulfuric acid production in east Tennessee required over 100 million kilowatt-hours for these vital products. Two other important defense installations are now under construction which will require unusually heavy power demands. These are, of course, the new atomic energy plant at Paducah, Ky., and the aircraft research facilities of the Arnold Engineering Development Center near Tullahoma, Tenn. Other important military and secret installations within the area use or will use large blocks of power from the system. Among these may be mentioned Fort Campbell near Clarksville, Tenn., Holston Ordnance Works near Kingsport, Tenn., Sewart Air Base near Nashville, and the McGhee-Tyson Airport development near Knoxville.

The major cities within the area require large quantities of power. Chattanooga, Tenn., whose industries provide chemicals, textiles, metal fabrications, machinery, and other production essential to defense, used over 1 billion kilowatt-hours. Likewise, Nashville and Memphis, Tenn., used about the same amount. The other principal city, Knoxville, consumed approximately ¾ billion kilowatt-hours.

I have given you these illustrations to point out the importance of the area from the standpoint of national defense. There is every indication that power demands are increasing and that it is essential that those demands be met by new developments. Estimates have been made by the Federal Power Commission and the Tennessee Valley Authority as to the anticipated increases, as you will note from the letters I previously introduced. Current estimates indicate that power demands will require a total installation of over 6.5 million kilowatts of generating capacity by 1955, with strong indication that an upward revision in those estimates will be necessary. Total installed capacity of the system at this time is slightly over 3 million kilowatts.

I can give you examples of increasing demands within the area. I am using the city of Nashville as typical of the region. The increases shown here are reflected throughout the entire area as well as elsewhere in the Nation. I have a number of charts which reflect the phenomenal increase in power usage. For example, chart 4 shows that in 1946 only 104 houses were heated electrically in Nashville. At the present time there are nearly 13,000 home units which depend for their heating upon electricity.

It is estimated that 22,000 television sets, comprising 26 percent of residential customers, have been purchased locally since inauguration of television broadcasting in September 1950. Electric ranges have increased from 14,000 to 56,500 in the past 12 years, which means that 68 percent of the people now cook with electricity. Refrigerator installations increased from 28,000 to 69,000 during the same period, for a saturation of 84 percent; and electric hot-water heaters increased from 3,600 in 1939 to 37,000 in 1951, or to 45 percent of the customers. Chart 5 is a graphic representation of this increase in appliance usage.

On chart 6, it is shown that the actual number of customers has increased from 45,500 in 1940 to 95,000 in 1951, which caused an increase in maximum power demand locally from 71,000 kilowatts to 284,000 kilowatts. (See chart 7.)

Nashville is now the second largest municipal consumer of electric energy per customer in Tennessee. The average residential consumption, as indicated on chart 8, amounts to 6,084 kilowatt-hours annually, while the highest in the State is at Chattanooga with an average of 6,339. The average for the Nation is only slightly over 2,000 kilowatt-hours.

As I have already stated, estimates have been made by the Federal Power Commission and the Tennessee Valley Authority, the using agency, as to the critical needs for new sources of power within the Cumberland River Basin. The Chairman of the Board of the Tennessee Valley Authority in his letter to the Chief of Engineers dated June 27, 1951, furnished further information with respect to the future power needs of the area. I should like to quote one pertinent paragraph from that letter. The entire letter is furnished for the record. The pertinent paragraph is as follows:

"In comparison with this total 1954 increase of approximately 600,000 kilowatts in the region's power supply, loads are expected to increase during 1954 by 650,000 kilowatts. Beginning with the very small margin of generating capacity that is expected at the end of 1953, these increases in load and capacity during 1954 were estimated to leave a margin at the end of that year of only 76,000 kilowatts, or a little more than 1 percent. This balance of requirements with expected load leaves no provision whatever for unanticipated new, large defense loads that might develop any time between now and the end of 1954. Any major new defense production or other facilities would necessitate supplementing

all of the presently scheduled power installations with the construction of additional generating capacity on an emergency schedule."

As an example of new industry coming into the area, an announcement has recently appeared in print that the B. F. Goodrich Co. will construct a new $5,000,000 plant at Calvert City in the northwestern portion of the area to adjoin and use the products of a new $10,000,000 plant to be built by the National Carbide Corp.

4. FLOOD-CONTROL FEATURES

The system of reservoirs proposed in the development plan for the Cumberland River will provide large benefits through the control of destructive floods. That such floods occur with regularity is amply substantiated by the nearly 100 years of documented records at Nashville. The primary point of damage within the Cumberland Basin is, of course, at that city, some 190 miles above the mouth of the stream. I have recently completed an up-to-date appraisal of the flood damages that would take place should the maximum flood of record, that of the winter of 1926–27, recur under present conditions of development. I have found that such a flood would damage the city of Nashville in excess of $6,000,000; however, with the authorized reservoirs in operation for flood control, Wolf Creek, Dale Hollow, Center Hill and Stewarts Ferry, this flood would cause only negligible damage, amounting to about $10,000. These conditions are illustrated graphically on chart 9. Although the three projects have only been in operation a relatively few years, that is, Dale Hollow since 1943, Center Hill since 1946, Wolf Creek since 1950, they have already been credited with saving an estimated amount of over 2¼ million dollars, within the Cumberland River Basin alone. But this is not the entire value of the projects from the standpoint of flood control. Major benefits also accrue as a result of reduction in flood heights on the lower Ohio and Mississippi Rivers. These values are in excess of those within the parent basin itself.

5. NAVIGATION FEATURES

The Cumberland River, particularly that section below and including Nashville, Tenn., is an important contributor to the inland-waterways system of the United States. The present facilities are all small and are obsolescent for modern traffic. In spite of the obvious handicaps, however, there has been a progressive increase in the diversity and quantity of materials now being transported over the waterway. The statistics indicate that within the last 5 years total traffic, including sand and gravel which is procured locally from the stream bed, has increased from approximately a million tons to over 1½ million tons. This rise by years is indicated on chart 10. Only a few days ago the Crosley Division of the Aviation Corp. received an initial shipment over the waterway of a million pounds of steel sheets for use in construction of appliances and defense products. Petroleum products supplying practically all of the middle Tennessee area move over the waterway. Other products, such as sulfur, iron and steel scrap, newsprint, timber, and sugar, utilized the navigation facilities. The river supports an important shipbuilding industry which participates substantially to defense production. Large quantities of sand and gravel are obtained from the stream bed.

The continuation of this low-cost transportation medium is essential to the welfare of the area and can only be obtained by replacement of the obsolescent system. In addition to this traffic which should continue, studies have indicated that an equally large movement of new traffic will take place upon provision of an adequate 9-foot waterway with modern locks. Our present estimate is that upon completion of the system, benefits in the amount of $1,580,000 will accrue to the waterway users on the river below Nashville which, in turn, will be reflected in the well-being of the Nation. Considerable savings also will accrue to the United States through reduction in operating cost as a result of decreasing the number of locks. These conditions are indicated by chart 11 in the folder.

Above Nashville it appears at this time that continuation of navigation facilities probably would be justified only to about Carthage, Tenn., some 120 miles above Nashville. We believe that such facilities are warranted in order to provide for the removal and transportation of mineral resources of the stream bed—that is, sand and gravel—and to provide for other traffic, both existing and prospective, which we think will utilize the waterway. Provision of lockage facilities will encourage new industries requiring large quantities of high-quality water and low-cost transportation to locate within the area.

6. OTHER FEATURES

In addition to the primary values of the plan of development as proposed in the interest of power, navigation, and flood control, other benefits will accrue. For

instance, better-regulated flows and the better quality of water provided through releases from the impoundments will reduce the serious pollution condition within the river, particularly in the Nashville area. You have only to visit our section of the country to appreciate the importance of recreational facilities provided by the impoundments. The quality of the water, as I have stated, will be improved, which will be reflected in lower treatment costs of the water taken from the river for industrial and domestic consumption. Although all of these cannot be evaluated accurately in terms of dollars and cents, they do make a major contribution to the value of the proposed projects.

7. LOWER CUMBERLAND PROJECT

I should now like to discuss with you the proposed authorization for the modification of the approved plan for the Cumberland River below Nashville by the substitution of one high head dam at approximately mile 30 above the mouth of the stream for the two presently authorized projects, Kuttawa at mile 32.2 and Dover near mile 100. The new project is tentatively proposed for power operation between elevations 354 and 359, corresponding to those currently in effect at the Kentucky project on the Tennessee River only a few miles to the west. At the top of the power pool, an area of approximately 62,000 acres will be covered. Flood-control storage will be available to approximately elevation 375. This space, amounting to some 34,000 acres at maximum pool, under the proposed plan of operation, will only be utilized upon rare occasions and for rather short periods, thus permitting continued utilization of the lands for agricultural pursuits. Water will be backed up to near Ashland City, Tenn., or to the new Cheatham project which is now under construction, and which is a common component of both the authorized three-dam plan or the proposed two dam-plan. Cheatham remains in the plan as originally proposed with the exception that we think power facilities should be installed. I shall take up this matter after I have finished with the lower Cumberland project.

At the time of the authorizing act in 1946, every indication was that the power requirements would not be so great as have actually developed. Too, there was strong opposition to a high dam on the lower Cumberland River from citizens and their official representatives in both the States of Tennessee and Kentucky. Since 1946, however, there has been a reversal of the previous objections and the urgent need for additional generating capacity for defense and other needs warrants the construction of the high dam with generating facilities in lieu of the navigation-only projects.

That the sentiment against provision of a high dam on the lower river in lieu of the two authorized navigation projects has changed is evidenced by a letter from the Governor of Kentucky dated December 19, 1950, in which he transmits a report of the Kentucky Department of Conservation, division of flood control and water usage. A copy of his letter and the report is attached for the record. There is also enclosed for the record a telegram dated May 2, 1951, from the Governor of Tennessee and addressed to the chairman of the Committee on Public Works of the House of Representatives. In this telegram Governor Browning has withdrawn the objections of the State against installation of a power dam on the lower Cumberland River. He recommended that every consideration be given to installation of power at that dam. Press releases and meetings of interested citizens within the affected area also indicate that the predominant sentiment is for the construction of the lower Cumberland project.

I have already given you information in my previous testimony and in the supporting letters which I believe adequately supports the urgency for installation of generating facilities. I think that it is evident that all hydro generating capacity can be absorved into the system. The installation of hydro power will also utilize one of our great national resources which otherwise would be wasted. The navigation only projects as presently authorized would restrict the full development of hydroelectric power for years to come.

A considerable amount of study has already gone into the formulation of the proposed plan for the lower portion of the river. It will be necessary, of course, before final decision is made as to location cost, and other features, that additional detail studies be made. The lower Cumberland project as presently estimated, would cost $130,000,000. The cost of a canal connecting the Kentucky and lower Cumberland Reservoirs is included in that figure.

Large monetary benefits will accrue as a result of operation of the project. As you know, full benefits from navigation will be realized upon completion of the new waterway for this section of the stream below Nashville. In setting up the justification for the lower Cumberland project, we have assigned a propor-

tionate share of the total benefits to the lower Cumberland project. Under present-day conditions we estimate that annually navigation will benefit in the amount of $3,114,000.

On the basis of values furnished to us by the Federal Power Commission on May 18, 1951, it is estimated that the project will provide average annual power benefits in the neighborhood of $4,183,000 annually.

Located as the project would be, near the mouth of the Cumberland River the project can be so designed as to operate very effectively toward the reduction of flood heights on the lower Ohio and Mississippi Rivers. Present estimates indicate that 80,000 cubic feet per second could be withheld from a project flood and an average of about 50,000 cubic feet per second from all other floods. Combining these factors, flood-control benefits on the Mississippi and Ohio Rivers are estimated in round numbers at $2,000,000.

Totaling the above benefits, it is our present estimate that $9,297,000 will accrue annually to the project. Evaluating these benefits against estimated annual charges of $5,580,000 gives an economic ratio of 1.67 to 1. The provision of an interconnecting canal between the Kentucky and lower Cumberland Reservoirs will provide appreciable additional benefits by permitting coordinated operation of the two projects in the interests of power, navigation, and flood control.

Under date of September 28, 1950, the Tennessee Valley Authority submitted a report to the President on the development of the Cumberland River below Nashville, Tenn. The Authority arrived at the conclusion that the plan of development of the river below Nashville by the lower Cumberland and Cheatham projects was economically justified and immediate construction warranted on the basis of current conditions. The Authority also considered that the construction of a canal linking the Kentucky and lower Cumberland reservoirs was desirable.

8. CHEATHAM PROJECT

The other project which I would like to discuss with you is Cheatham, located at mile 148.7 above the mouth of the river. This project was authorized for navigation only in the River and Harbor Act of 1946 and is now under construction. Our current studies indicate that power-generating facilities can be installed in the project and that they will be economically justified. That the output of the plant is needed, I believe I have adequately indicated in my preceding discussion. Consequently, I shall not again go into that phase of the question. It is proposed that a plant with an installed capacity of 36,000 kilowatts be added at the left abutment of the navigation dam and that the pool be operated at elevation 385. This pool level incidentally will be of considerable advantage to navigation interests, particularly in the Nashville area.

The estimated cost of the power features, made in 1950, is $15,000,000. This, added to the $14,000,000 for navigation facilities, gives a total project cost of $29,000,000. The benefits from power, evaluated on the basis of the capacity of 36,000 kilowatts added to the Cumberland River system, and the expected energy output, total $1,212,000 annually. A comparison of these benefits against estimated annual charges on the power installation of $780,000, gives a favorable economic ratio of 1.55 to 1, indicating that the addition of power-generating facilities is warranted.

9. SUMMARY

To indicate the projects making up the present plan for development of the water resources of the Cumberland River Basin, I am including for the record a tabulation of the reservoir projects now authorized or proposed, giving their location, purposes, and costs. You will note that, to help meet the increasing power demands of the region, an installation of some 913,000 kilowatts is proposed. Adding to this the tentative installation of the four headwater projects, a total potential of slightly more than 1,000,000 kilowatts is available within the Cumberland River Basin.

ADDENDUM WITH RESPECT TO PROJECT ESTIMATE FOR CHEATHAM

With respect to the Cheatham estimate of $15,000,000 as carried in S–97 and as discussed in the preceding testimony, a recent review of the basic figures by the Chief of Engineers indicates that there should be an upward revision of that figure to accord with conditions existing in 1951. Based on current construction indexes and with an allowance for contingencies, our present estimate of the cost of the power features is $18,200,000. Using the benefits previously stated, the project will still be well within economic limits. An up-to-date analysis of the benefits will doubtless restore the economic ratio.

TABLE 1.—*Cumberland River, Ky. and Tenn., comprehensive plan of development*

Project	River	Purpose	Status	Estimated cost (1950 base)	Power installation (kilowatts)		
					In operation	Under construction	Ultimate
Authorized and recommended:							
Wolf Creek	Cumberland	Flood control and power.	Under construction	$82,700,000		270,000	270,000
Dale Hollow	Obey	do	Complete	26,050,000	36,000	18,000	54,000
Center Hill	Caney Fork	do	do	45,700,000	135,000		135,000
Stewarts Ferry	Stones	do	Authorized	19,000,000			13,500
Three Islands	Harpeth	do	do	17,300,000			18,000
Rossview	Red	Flood control	do	10,000,000			
Celina	Cumberland	Flood control and power.	do	31,880,000			64,800
Carthage	do	do	do	37,240,000			92,000
Old Hickory	do	Navigation, flood control, and power.	do	49,120,000			100,000
Cheatham	do	Navigation	Under construction	14,000,000			
		Power	Proposed [1]	[2] 15,000,000			36,000
Lower Cumberland [3]	do	Navigation, flood control, and power.	do [2]	130,000,000			130,000
Total				477,990,000	171,000	288,000	913,300
Probable additional:							
Rockcastle	Rockcastle	Power	Proposed				10,000
Laurel	Laurel	do	do				20,000
Helenwood	South Fork	do	do				40,000
Devils Jumps	do	do	do				25,000
Total							95,000
Grand total					171,000	288,000	1,008,300

[1] Authorization pending.
[2] On basis of 1951 price levels, cost is estimated at $18,200,000.
[3] Replaces authorized Kuttawa (Eureka) and Dover Locks and Dams.

FEDERAL POWER COMMISSION,
Washington, December 1, 1950.

Maj. Gen. LEWIS A. PICK,
Chief of Engineers,
Department of the Army, Washington, D. C.

DEAR GENERAL PICK: This is in reply to Col. W. E. Potter's letter of November 6, 1950, requesting an expression of the Commission's views with respect to the needs for the potential power from eight projects included in the authorized plan for the improvement of the Cumberland River Basin. These projects are as follows:

Project	*Installed capacity (kilowatts)*
Dale Hollow	36,000
Center Hill	135,000
Wolf Creek	270,000
Stewarts Ferry	13,500
Old Hickory	100,000
Carthage	92,000
Celina	64,800
Cheatham	36,000

The Dale Hollow project has been completed by the Corps of Engineers with provisions for an additional unit of 18,000-kilowatt capacity. The Center Hill and Wolf Creek projects are presently under construction for purposes which include power, and the Cheatham project is under construction for navigation and future power. The capacity in the above-listed projects aggregate 765,000 kilowatts, including the third unit at Dale Hollow.

It is understood that if additional funds are made available in fiscal year 1951, the generating capacity at the Stewarts Ferry project could be made available in December 1953, the generating capacity at the Old Hickory project starting in January 1954, and at the Carthage project starting in November 1954. The additional generating unit at the Dale Hollow project could be made available in May 1953. It is also understood that a request for supplemental funds for these projects in fiscal year 1951 is being submitted to the Bureau of the Budget.

The Cumberland River projects are located in the service area of the interconnected and coordinated systems of the Tennessee Valley Authority and the Aluminum Co. of America. In this regard, the Tennessee Valley Authority and the Department of the Interior have entered into an agreement providing for sale to the Authority of the power generated at the Dale Hollow, Center Hill, and Wolf Creek projects.

As of September 1950, the dependable capacity of the TVA–ALCOA system was 2,798,000 kilowatts. Scheduled additions of capacity in the last 3 months of 1950 include two 45,000-kilowatt units at the Center Hill project with a dependability estimated at 39,000 kilowatts per unit and new firm-power purchases amounting to 65,000 kilowatts from sources outside the area, bringing the dependable capacity as of December 31, 1950, to 2,941,000 kilowatts. Definitely scheduled additions to dependable capacity for 1951, 1952, and 1953 include 1,250,000 kilowatts of steam-electric capacity and 610,000 kilowatts of hydroelectric capacity, including the third unit at Center Hill and the full installation at Wolf Creek. The scheduled additions do not include 355,000 kilowatts reported to be available, in 1951 only, from outside sources.

The power-supply situation in this area is summarized below. The load estimates used in this analysis are those of the TVA–ALCOA system, since the Commission does not have complete information on the rapidly expanding defense facilities in the area.

Year ending—	Dependable capacity	Estimated peak demand
	Thousand kilowatts	*Thousand kilowatts*
Dec. 31, 1950	2,941	3,180
Dec. 31, 1951	3,423	3,860
Dec. 31, 1952	4,750	4,250
Dec. 31, 1953	4,801	4,650

From the foregoing tabulation it can be seen that the dependable supply available in 1950 and 1951 is not sufficient even to meet the estimated loads, and that in 1953 the dependable capacity will be 151,000 kilowatts in excess of the load requirements, thus indicating reserves of only slightly more than 3 percent. This amount of reserves is not considered adequate to insure continuity of service in the event of accident to or outage of equipment. The Commission staff believes that the reserve requirements should be about 15 percent of the peak load.

The estimated increase in the peak demand for power in the area during the period between 1950 and 1953 averages 490,000 kilowatts annually. The capacity to be installed in the Cumberland River projects listed in your letter amounts to 765,000 kilowatts. However, the capacity in the Dale Hollow (2 units), Center Hill, and Wolf Creek projects, aggregating 441,000 kilowatts, has been included in the figures above for dependable capacity which will be available by 1953. Deducting this amount from the 765,000 kilowatts leaves a net addition of 324,000 kilowatts, or an amount which is substantially less than the estimated annual load growth. When consideration is also given to the reserve requirements, the necessity for additional capacity in the amounts that the listed projects would provide becomes all the more apparent.

Based upon the above considerations, the power at the projects listed in your letter would make a valuable contribution to the power-supply needs of the area, and it appears that this power could be absorbed as soon as it could be made available.

Sincerely yours,

MON C. WALLGREN, *Chairman.*

TENNESSEE VALLEY AUTHORITY,
KNOXVILLE, TENN.,
December 1, 1950.

Col. W. E. POTTER,
United States Army, Acting Assistant Chief of Engineers for Civil Works,
Office of the Chief of Engineers, Corps of Engineers, Washington, D. C.

MY DEAR COLONEL POTTER: We are writing in response to your letter of November 6, 1950, in which you requested information as to the needs for power which could be furnished from the Cumberland River projects. You stated that a request for supplemental funds was being submitted to the Bureau of the Budget for the third Dale Hollow unit, the Stewart's Ferry project, the Old Hickory project, and the Carthage project, for which initial operating dates would range from May 1953 to November 1954.

Within the area that depends upon TVA for power we expect an increase in demand during the fiscal year 1954 of from 400,000 kilowatts to 600,000 kilowatts, depending upon the status of mobilization for national defense. The installation of new generating capacity that we are projecting, including the assumed installation of the third Dale Hollow unit in the fall of 1953 and the installation of 75,000 kilowatts in the Cumberland Basin in calendar year 1954, through construction of the Old Hickory project or otherwise, will leave margins of only about 3 percent of assured capacity over estimated probable peak requirements. Considering how small an allowance this is for unanticipated conditions, additional capacity that could be economically justified would be a wise addition to the area's power supply during 1953 and 1954.

We believe it is likely to be very important to complete on the earliest possible schedule all the generating facilities now under construction in the Cumberland Basin, as well as those economically justified plants which can be started in the near future. In the interests of increased mutual attention to the possible desirability of more rapid Cumberland River development as one means of helping to meet growing power demands, I am suggesting that representatives of our power and engineering organizations arrange further meetings with your district engineer in the near future. Joint discussions should provide your staff with more complete information as to power needs and ours with necessary facts regarding the power that could be made available and its probable cost.

Very truly yours,

TENNESSEE VALLEY AUTHORITY,
GEORGE F. GANT, *General Manager.*

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., December 7, 1950.

Col. HENRY WALSH,
District Engineer, United States Engineers,
Nashville, Tenn.

DEAR COLONEL WALSH: This will respond to your request for further information on the need for additional hydro capacity in the Cumberland Basin. In our plans for meeting defense and other loads expected during the next 4 years within the TVA service area, we are relying upon completion of certain capacity installations in Cumberland Basin projects in addition to capacity which is being provided in our hydro and steam projects.

We are counting heavily upon the completion of the three units at Center Hill and the six units at Wolf Creek which are now under construction. Expanded requirements of the Atomic Energy Commission at Oak Ridge together with other heavy demands for power in the region brought about in greater volume by defense needs for production of essential materials makes it imperative that these units, as well as other capacity now scheduled by TVA, be completed ahead of schedule if possible. Even if that could be accomplished, there would be only a very small margin of capacity by the end of 1952 to help take care of loads that develop in addition to recent estimates.

We now foresee greater than normal growth in loads in the TVA service area in 1953 and 1954 due to increasing demands of defense industries producing chemicals, ferro-alloys, steel, and other materials important to the defense effort. We now estimate increases of at least 650,000 kilowatts in 1953 and 600,000 kilowatts in 1954. Since present defense activities are lengthening out the time for manufacture and delivery of new generating equipment, we are finding that orders for capacity to be in operation in 1954 should be placed by the middle of 1951 or earlier, depending on the time needed for individual projects. Early action is necessary for any capacity that is to be fully useful in 1954.

As indicated by Mr. Gant in his letter to Colonel Potter, copy attached, we have assumed that a portion of the load increases in 1953 and 1954 will be met by new capacity which would be provided in projects within the Cumberland Basin, including installation of the third Dale Hollow unit in the fall of 1953 and the installation in 1954 of at least 75,000 kilowatts at other Cumberland projects. In light of the urgent need for more power capacity in the Tennessee and Cumberland Region, I would like to reiterate the point made by Mr. Gant in his letter to Colonel Potter that "it is likely to be very important to complete on the earliest possible schedule all the generating facilities now under construction in the Cumberland Basin, as well as those economically justified plants which can be started in the near future."

Very truly yours,

GORDON R. CLAPP,
Chairman of the Board.

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., May 1, 1951.

Col. HENRY WALSH,
District Engineer, Corps of Engineers
United States Army Engineers, Nashville, Tenn.

MY DEAR COLONEL WALSH: We are beginning to give increasing attention to the steps that will need to be taken to provide for the growing power requirements of this region in 1955 and 1956. Several hundred thousand kilowatts of new generating capacity will certainly be required in each of these years.

In accordance with the conferences between us, our planning of new TVA projects will take full account of the generating capacity that your development of the Cumberland River will provide. The schedules developed in the meeting your office on January 9 call for power operation in 1955 at the proposed lower Cumberland Dam near Smithland. The first four of the generating units that will be made possible by the adoption of the high-dam plan for that project would be placed in service at intervals from May to December 1955 and the fifth unit early in 1956. The full installation would provide some 130,000 kilowatts of power. In the same meeting, the Carthage plant was also scheduled for operation in 1955, with four units providing a total capacity of 92,000 kilowatts to be placed in service between March and December 1955.

We would appreciate your confirming these schedules, so that we can be confident that our planning is still on a sound basis.

Because of the size of the lower Cumberland development, we assume that its schedule is particularly tight. Its size, and its location and operating characteristics, also make its operation on schedule of particular interest to us. We trust that no serious obstacles will interfere with its completion as planned.

This area faces a critically tight power supply situation this year, as you know, and new demands are developing about as rapidly as new power facilities can be installed. As a result, there is no prospect of developing in the foreseeable future any appreciable margin of power supply such as would be desirable from the standpoint of national defense. The lack of such a margin makes it doubly imperative, of course, to avoid any delays in the installations that are scheduled to provide for such load growth as we are certain to face.

Any current information you can give us as to progress in the development of power on the Cumberland River will be greatly appreciated.

Very truly yours,

TENNESSEE VALLEY AUTHORITY,
G. O. WESSENAUER,
Manager of Power.

DEPARTMENT OF THE INTERIOR,
SOUTHEASTERN POWER ADMINISTRATION,
Elberton, Ga., May 4, 1951.

DISTRICT ENGINEER,
Nashville District, Corps of Engineers,
Nashville, Tenn.

DEAR SIR: Representatives of this office attended a meeting at your office in January to discuss scheduling of the projects in the Cumberland Basin. Among the projects discussed at that meeting was the high dam on the lower Cumberland, a project which was not originally authorized as part of the plan for navigation on the Cumberland River but which now appears to be generally recognized by all concerned as a desirable project. In the schedule discussed at the meeting this lower Cumberland project had been included for early construction. As we understood it at that time, although the project had not been authorized it was anticipated that authorization would be forthcoming at an early date and that construction probably could proceed as scheduled thereafter.

We are somewhat concerned at the information given our representative, at a meeting in your office on May 1, that the project has not yet been authorized and that as a result the construction may be delayed materially. I know that you are as well aware of the need for the power from this project as we are and that we do not need to elaborate on that point at this time. However, I will appreciate it if you will give me whatever information you have as to prospects for the early authorization of the project and your present ability to maintain the schedule which has previously been set up for it.

Very truly yours,

C. W. LEAVY, *Acting Administrator.*

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., June 27, 1951.

Maj. Gen. LEWIS A. PICK,
Chief of Engineers, Corps of Engineers,
Department of the Army, Washington, D. C.

DEAR GENERAL PICK: As I told you at Tullahoma, we are distressed about the elimination of funds from the 1952 appropriation request to start construction of the Old Hickory Dam and to install generating equipment at Cheatham Dam on the Cumberland River.

As you know, TVA's power supply studies have taken fully into account the power that we have expected to become available from the Corps of Engineers' development of the Cumberland River. In determining the program of construction of generating capacity for which TVA, in turn, has requested appropriations, we have assumed the installations of generating capacity at Old Hickory and Cheatham by the Army engineers in accordance with the schedules you furnished us. (See pp. 600–601, House hearings, independent offices appropriations, 1952.) The first three generating units at Old Hickory and the first two units at Cheatham

have been expected to be in operation during 1954, with the third Cheatham unit and the fourth Old Hickory unit following early in 1955. This schedule would provide approximately 100,000 kilowatts of new generating capacity on the Cumberland River during the calendar year 1954. To meet estimated power requirements expected from TVA we have planned to add 500,000 kilowatts of capacity in steam units and additions to the hydro plants in the Tennessee River system. Thus the Army proposals on the Cumberland, plus TVA's proposals, would provide 600,000 kilowatts of new capacity in the TVA power service area in 1954.

In comparison with this total 1954 increase of approximately 600,000 kilowatts in the region's power supply, loads are expected to increase during 1954 by 650,000 kilowatts. Beginning with the very small margin of generating capacity that is expected at the end of 1953, these increases in load and capacity during 1954 were estimated to leave a margin at the end of that year of only 76,000 kilowatts, or a little more than 1 percent. This balance of requirements with expected load leaves no provision whatever for unanticipated new, large defense loads that might develop any time between now and the end of 1954. Any major new defense production or other facilities would necessitate supplementing all of the presently scheduled power installations with the construction of additional generating capacity on an emergency schedule.

The figures I have referred to above are those which we presented in the hearings on the independent offices appropriations for 1952. (See, for example, p. 443 of the Senate hearings.) The further experience to date shows that load growth is exceeding our estimates and that even if all proposed installations are completed on schedule, the situation at the end of 1954 is likely to be still tighter than we had estimated. Even on the basis of the figures cited, if the Old Hickory and Cheatham installations are deferred because of lack of funds, or for any other reason, the very small indicated margin would be changed to a deficit.

In our judgment, the need for all the scheduled power installations in the Tennessee and Cumberland Basins cannot reasonably be doubted; the probability of still further load increases is so strong, in fact, that it is highly important to improve, if possible, the construction schedules that have been developed. Therefore, we urge that every effort be made to seek restoration of the funds which were removed by the House from the budget for 1952 so that you will be able to make as much progress as possible during that year toward the completion of the Old Hickory and Cheatham power installations. Further, we urge that you explore the possibility that the 1952 works that those funds would permit could be followed in the succeeding years with a sufficiently accelerated construction schedule to complete the installation of the final Old Hickory and Cheatham units in the fall of 1954 rather than early in 1955, so as to increase the capacity that can be in service in time to meet the peak power demands that must be expected at the end of 1954. In our judgment, based on experience to date, the completion of the full power installations at these two plants well before the end of 1954 would be highly desirable.

Please let me know if we can provide any further information in this connection.

Sincerely yours,

GORDON R. CLAPP, *Chairman of the Board.*

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., July 25, 1951.

Maj. Gen. LEWIS A. PICK,
Chief of Engineers, Corps of Engineers,
United States Department of the Army, Washington, D. C.

DEAR GENERAL PICK: We are writing in response to the oral request, in connection with your current discussions of 1952 appropriations with the Bureau of the Budget, for summary information as to growing power requirements in this area and the capacity expected to be available to supply those requirements.

We estimate that by the winter of 1954–55 we will have a system load of at least 6,150,000 kilowatts. That forecast represents some upward revision from previous estimates furnished to the Bureau of the Budget; we are presently engaged in a detailed review of future power requirements that suggest that still further upward revision may be necessary. The installation of new generating capacity before the end of the calendar year 1954 which have been planned to date would provide an assured load-carrying capacity of a little less than 6,200,000 kilowatts to meet the estimated peak demand of 6,150,000 kilowatts. Even before concerning ourselves with 1955 load growth, it is obvious that to provide the

minimum desirable working margin for unanticipated further load growth or failure to complete construction programs on schedule it will be necessary for us to try to add to the capacity now scheduled for completion in 1954.

The load-carrying capacity of nearly 6,200,000 kilowatts planned for by the end of 1954 includes the first three units at your Old Hickory project and the first two units at your Cheatham project. As stated in my recent letter, it is extremely important that construction of these two plants be expedited, if at all practicable, so as to complete their full installation well before the end of 1954.

In addition to expanding the 1954 installations to whatever extent may be practicable, a good deal of new capacity must be scheduled for 1955 to take care of load growth in that year. While we have not yet completed the detailed estimates of the probable increase in requirements by the several classes of customers, we would in any case expect that a growth of at least 10 percent in total system power requirements should be anticipated as a minimum in 1955. This would call for the installation in this region in 1955 of a minimum of well over 600,000 kilowatts in terms of increased net assured capacity (possibly 700,000 kilowatts in name-plate capacity). The studies in which we are now engaged, looking forward to 1955, suggest a strong probability that twice that amount of new capacity should be added before the end of 1955 to provide adequate provision for new loads.

In accordance with the schedules we have discussed with your district office, we have been developing our own construction program on the assumption that in addition to completing the Old Hickory and Cheatham projects in 1954 or 1955, there will be installed in the Cumberland Basin during the calendar year 1955 the four units at the Carthage project and four of the units at the lower Cumberland project, with a total name-plate rating of 196,000 kilowatts. Acceleration and expansion of your 1955 program would be very helpful, and we believe that any steps in that direction that could be taken now would be very important.

To the extent that your program for the Cumberland River can be accelerated, the provision of an adequate power supply for this region can better be assured. Any reduction in your program would have to be offset promptly by the construction of other new generating capacity. The status of your requests for funds is, therefore, of vital concern to us. We will greatly appreciate being kept advised of developments. If we can provide any further information to you, to the Bureau of the Budget, or to the Congress as to power needs, please let us know.

Very truly yours,

GORDON R. CLAPP,
Chairman of the Board.

COMMONWEALTH OF KENTUCKY,
EXECUTIVE CHAMBER,
Frankfort, December 19, 1950.

Maj. Gen. LEWIS A. PICK,
Commanding General, Corps of Engineers,
Washington, D. C.

DEAR GENERAL PICK: This is written as a letter of transmittal to which is attached a report from the Kentucky Department of Conservation, Division of Flood Control and Water Usage. This agency functions as a board of study and review of all matters pertaining to flood control dam construction over streams within the Commonwealth, and the general development of the great river basins with which our State is so richly endowed.

So that both the Congress and the Corps of Engineers might have the benefit of the study and investigation and the recommendation of the flood-control and water-usage board, I am pleased to submit their findings for your information and careful consideration.

With every good wish, I am

Sincerely yours,

LAWRENCE W. WETHERBY, *Governor.*

COMMONWEALTH OF KENTUCKY,
DEPARTMENT OF CONSERVATION,
DIVISION OF FLOOD CONTROL AND WATER USAGE,
Frankfort, Ky., December 14, 1950.

A report—

To: The Governor of the Commonwealth of Kentucky.

Subject: Development of the lower Cumberland River, Ky., as proposed by United States Senate bill 4202.

A tremendous increase in the demand for hydroelectric power, the growing importance for additional flood-control facilities for the benefit of the lower Cumberland, the Ohio, and Mississippi Rovers, added emphasis which has been placed upon the value of navigation, and the possibility of coordinating two great reservoirs on the lower Cumberland and lower Tennessee Rivers for power production, flood control, and navigation are factors which have brought the Kentucky Flood Control and Water Usage Board to the conclusion that a multipurpose dam and reservoir should be constructed on the lower Cumberland River.

The board since April of 1950 has been seeking to determine the attitude of the people who would be affected by the development of the lower Cumberland River. Members of the board personally inspected the proposed project site in that month. Within recent weeks it has intensified its investigations, and held hearings at Paducah, Ky., and Gilbertsville, Ky. From testimony presented at these hearings, from personal interviews and information furnished by mail, telephone, and telegraph, the board has concluded that public sentiment favors construction of a multipurpose dam over navigation dams if the lower Cumberland is to be developed.

Investigations and studies covering the history of the proposals for development of the valley date back to the report submitted to the Governors of Kentucky and Tennessee by the United States Corps of Engineers in 1945. This report recommended construction of a high dam for navigation and power production, without provision for flood control, in the vicinity of Eureka, Ky.

A review of the engineers' report by the Governor of Kentucky indicated that at the time public sentiment was opposed to such a proposal, and also that there was some doubt as to a market for the anticipated power productions.

On January 23, 1946, the Governor of Kentucky recommended that three navigation dams be built in lieu of the proposed high dam.

There is ample evidence to substantiate reports that additional electric power is now needed in the rapidly expanding industrial area of western Kentucky. Construction of a huge plant by the Atomic Energy Commission near Paducah, Ky., is an example of this. Chemical and metallurgical industries located near Kentucky Dam and vitally important to the national welfare have been prevented from expanding as needed by a shortage of electric power. The board has been convinced that the additional power which would be produced by a multipurpose dam on the lower Cumberland River is needed for the national welfare.

The board concurs in the recommendation of the United States Army Corps of Engineers and the Tennessee Valley Authority that plans heretofore approved by the United States Congress for the construction of two dams in the lower Cumberland River for the sole purpose of providing river navigation be abandoned because circumstances existing at the present time show conclusively that a project providing for production of electric power and flood control as well as navigation should be substituted.

At a special meeting called for consideration of this subject matter, the board adopted a motion recommending passage of a measure introduced in the United States Senate by Senator Kenneth McKellar, of Tennessee, providing for construction of this project.

The partial text of this bill, which is S. 4202, follows:

"The comprehensive plan of improvement of the Cumberland River and tributaries for navigation, flood control, power development, and other purposes authorized by section 1 of the Act of Congress of July 24, 1946 (Public Law 525, Seventy-ninth Congress), is hereby amended to include the construction, operation, and maintenance under the direction of the Secretary of the Army and supervision of the Chief of Engineers of the lower Cumberland Dam and Reservoir on the Cumberland River at an estimated cost of $130,000,000 in lieu of the authorized Kuttawa (Eureka) and Dover Dams.

"The lower Cumberland Dam and Reservoir project shall be constructed, operated, and maintained for navigation, flood control, hydroelectric power, and other purposes with the dam site approximately thirty miles upstream from the mouth of the Cumberland River, a normal operating pool at approximately elevation 355, and top of flood-control storage pool at approximately elevation 375.

"In addition to the reservoir, dam, navigation lock, hydroelectric generating facilities (including step-up switchyard), the project may include a canal between the Lower Cumberland Reservoir and the Kentucky Reservoir on the Tennessee River for navigation and to permit the utilization of the flow of the Cumberland and Tennessee Rivers to the best possible advantage, if, in the opinion of the Chief of Engineers, such a canal is found to be necessary or advisable on the basis of further studies."

The board has been informed that the measure as introduced by Senator McKellar reflects the recommendations of the United States Army Corps of Engineers. It also substantially follows the recommendations made to the President by the Tennessee Valley Authority following a study of the lower Cumberland River requested by the President.

The board concurs in the findings of the Tennessee Valley Authority in its report to the President. In that report, the Tennessee Valley Authority summarized its recommendations in the following language:

"After thorough consideration of pertinent factors and a careful study of many alternate plans of development, TVA engineers have come to the conclusion, and the TVA Board concurs, that a high dam should be constructed on the lower Cumberland River in the general vicinity of Grand Rivers, Ky., in lieu of the presently authorized Kuttawa and Dover low-navigation dams. This high-dam project would create a slack-water navigation pool upstream to the Cheatham Dam, now under construction, appreciably reduce flood crests on the lower Ohio and Mississippi Rivers, and provide much needed hydroelectric capacity of at least 130,000 kilowatts. The recommended plan would have a considerably higher ratio of benefits to costs than would any of the alternate plans of development."

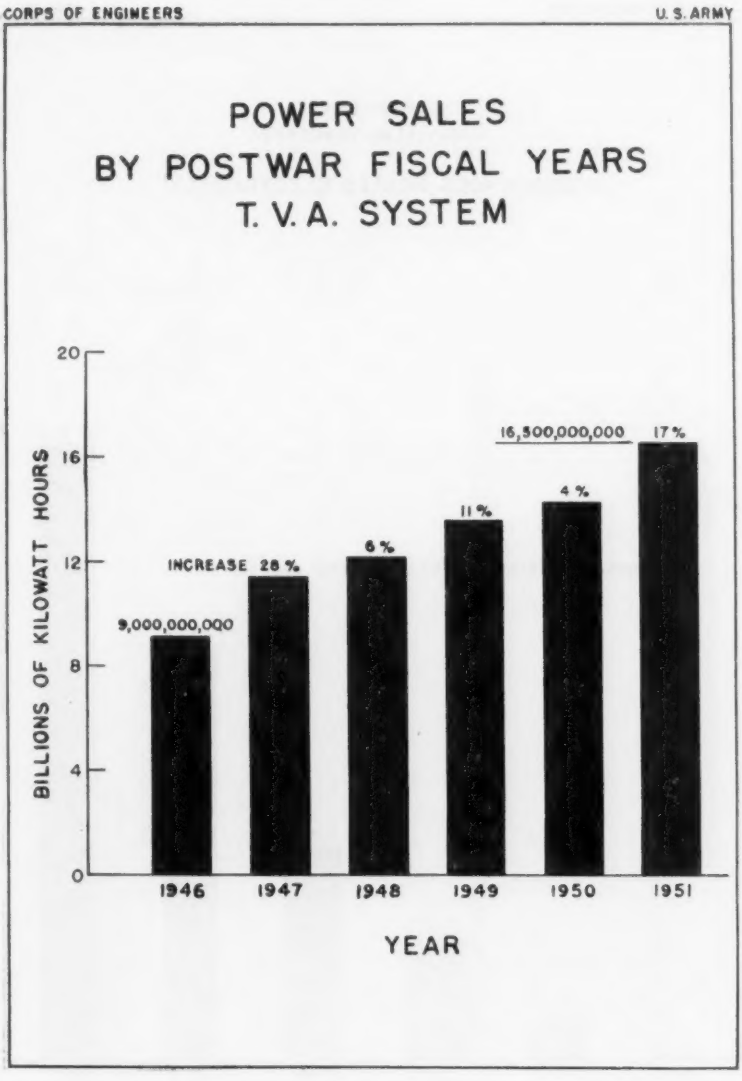
[Telegram]

GOVERNOR'S OFFICE,
May 2, 1951.

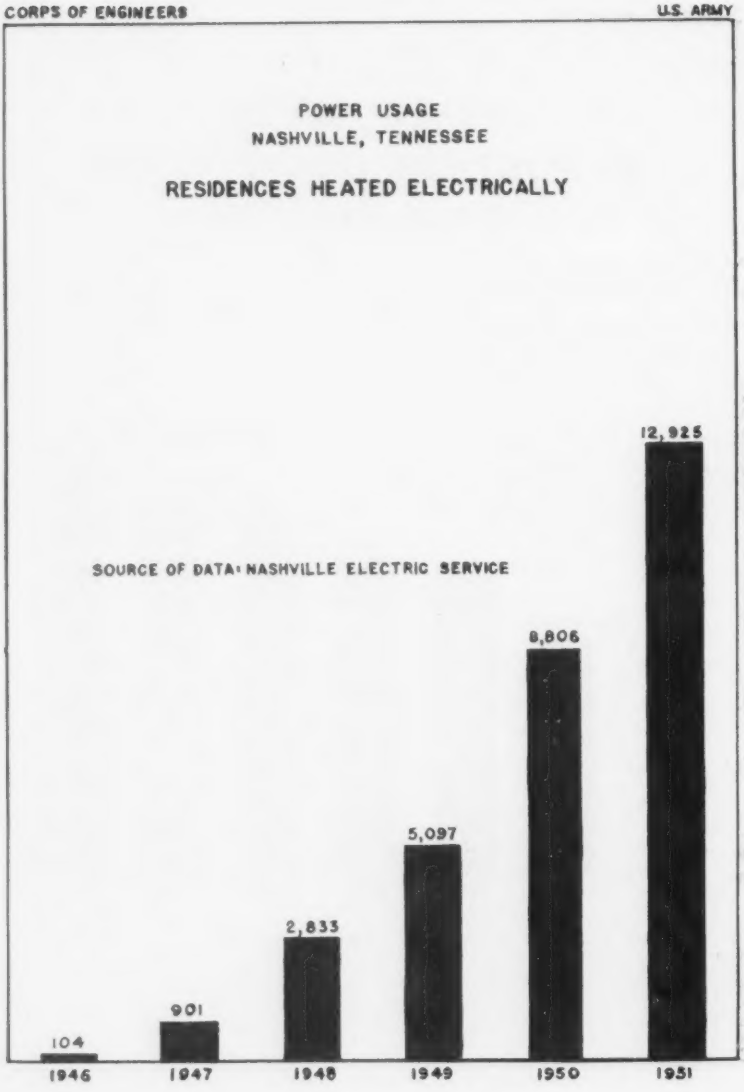
CHAIRMAN, COMMITTEE ON PUBLIC WORKS,
House of Representatives, Washington, D. C.

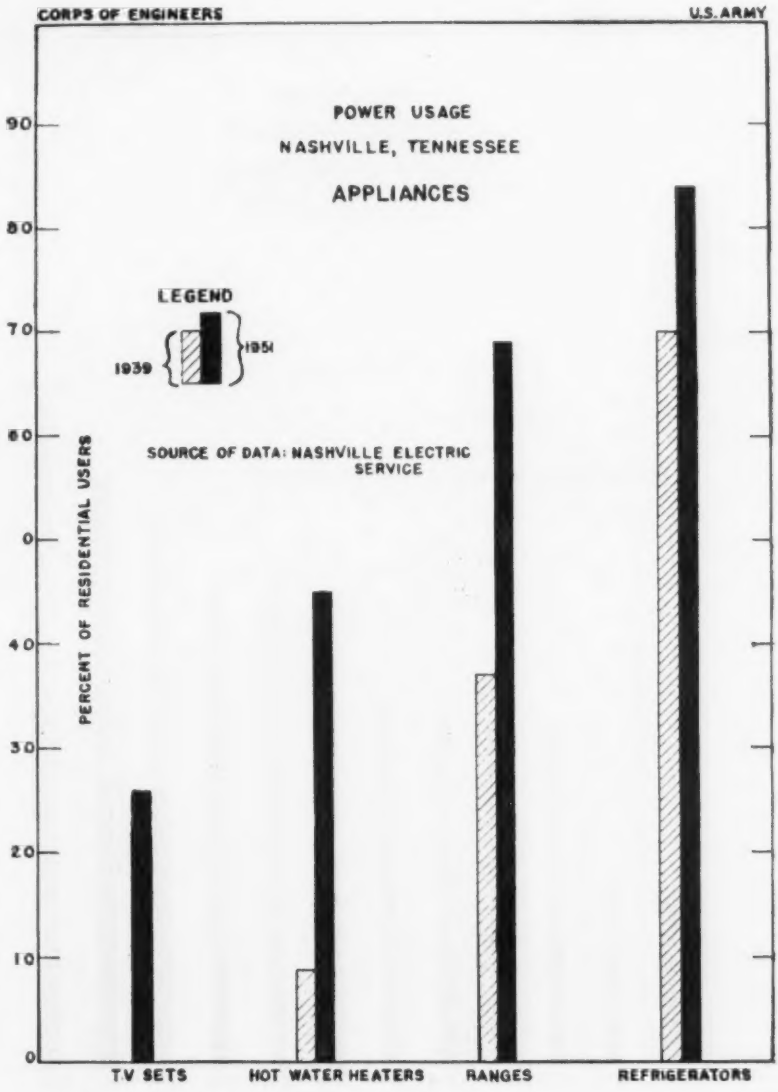
Further study has been made by the representatives of this State relative to power in the so-called high dam located at mile 30.5 Cumberland River, near Grand Rivers, Ky., Objections raised by one of my predecessors have been removed through the unforeseen power requirements in the State of Tennessee and the additional load that has been placed through the defense necessities. So, therefore, the State of Tennessee withdraws its objections for no power in the dam located at mile 30.5 Cumberland River near Grand Rivers, Ky. It is recommended that every consideration be given to install power at said dam.

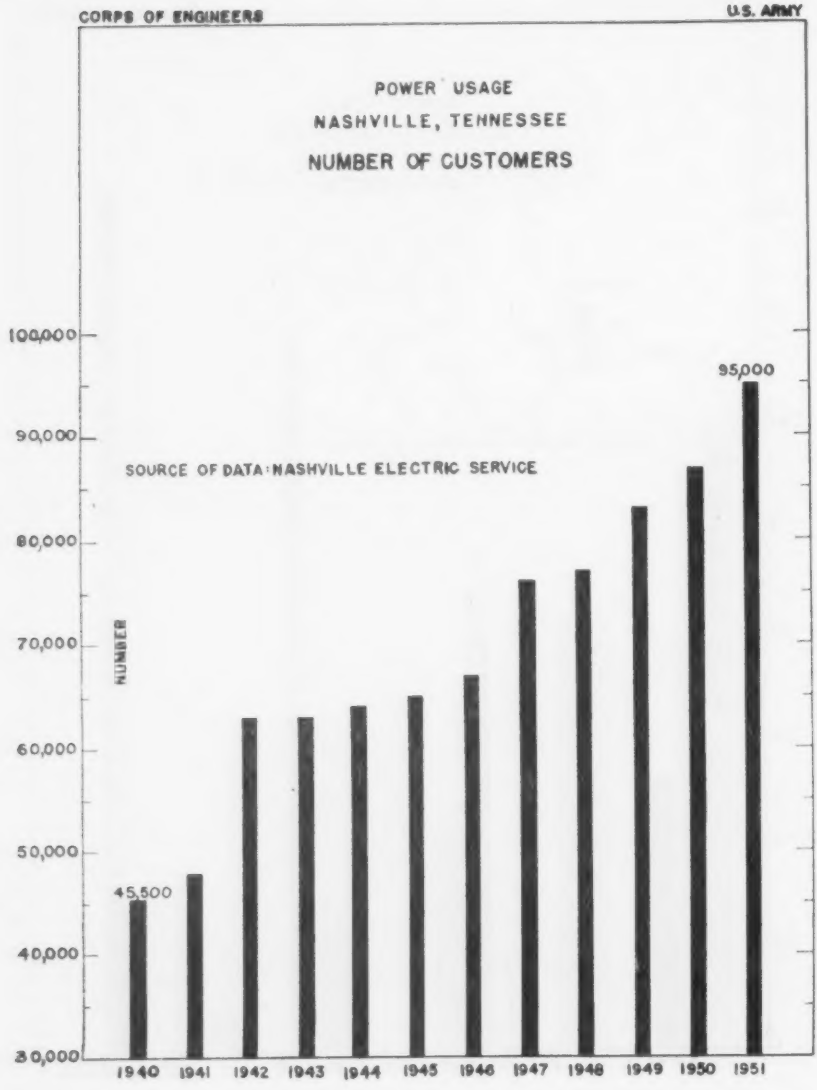
GORDON BROWNING,
Governor of Tennessee.

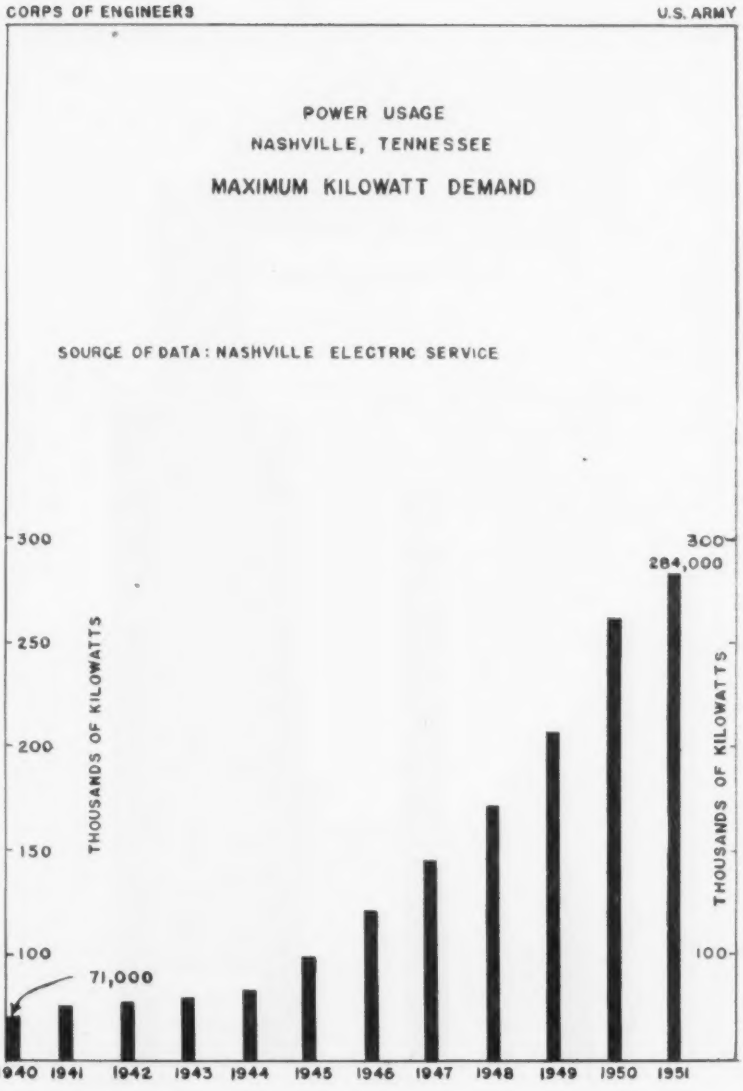

CORPS OF ENGINEERS
U. S. ARMY
POWER SALES
BY POSTWAR FISCAL YEARS
T. V. A. SYSTEM
BILLIONS OF KILOWATT HOURS
20
16
12
8
4
0
9,000,000,000
INCREASE 28 %
6 %
11 %
4 %
16,500,000,000
17 %
1946
1947
1948
1949
1950
1951
YEAR

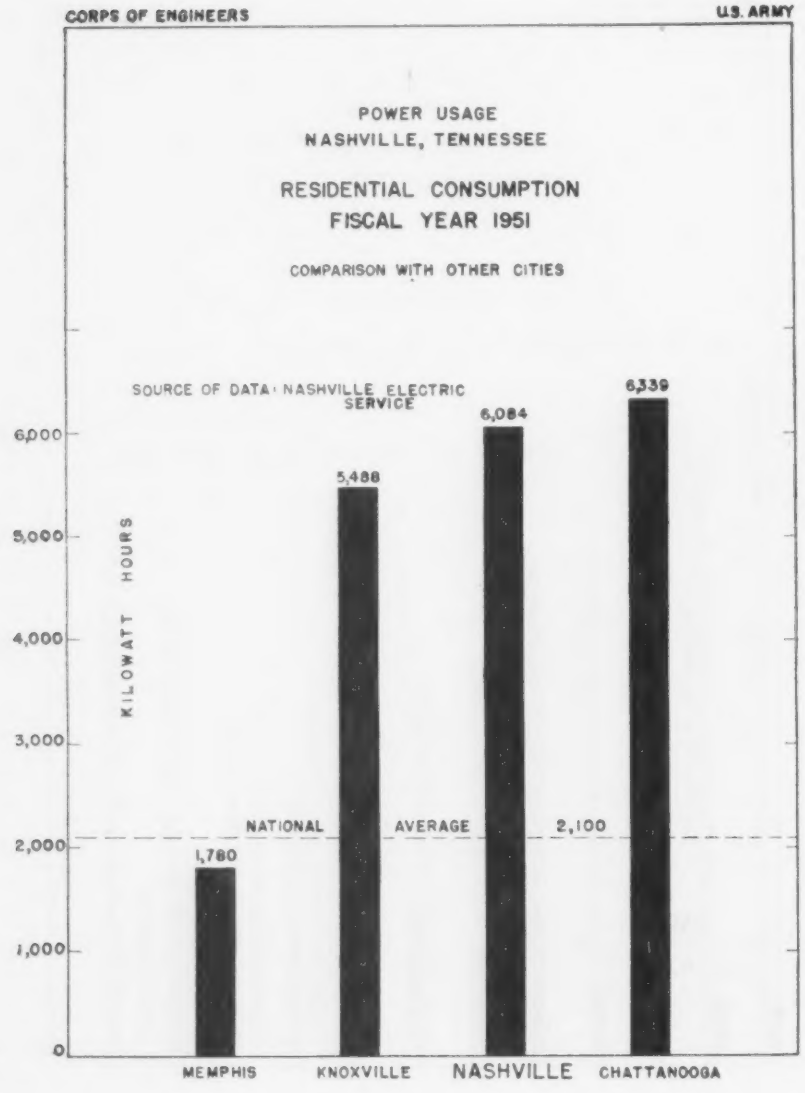
88419—51——4

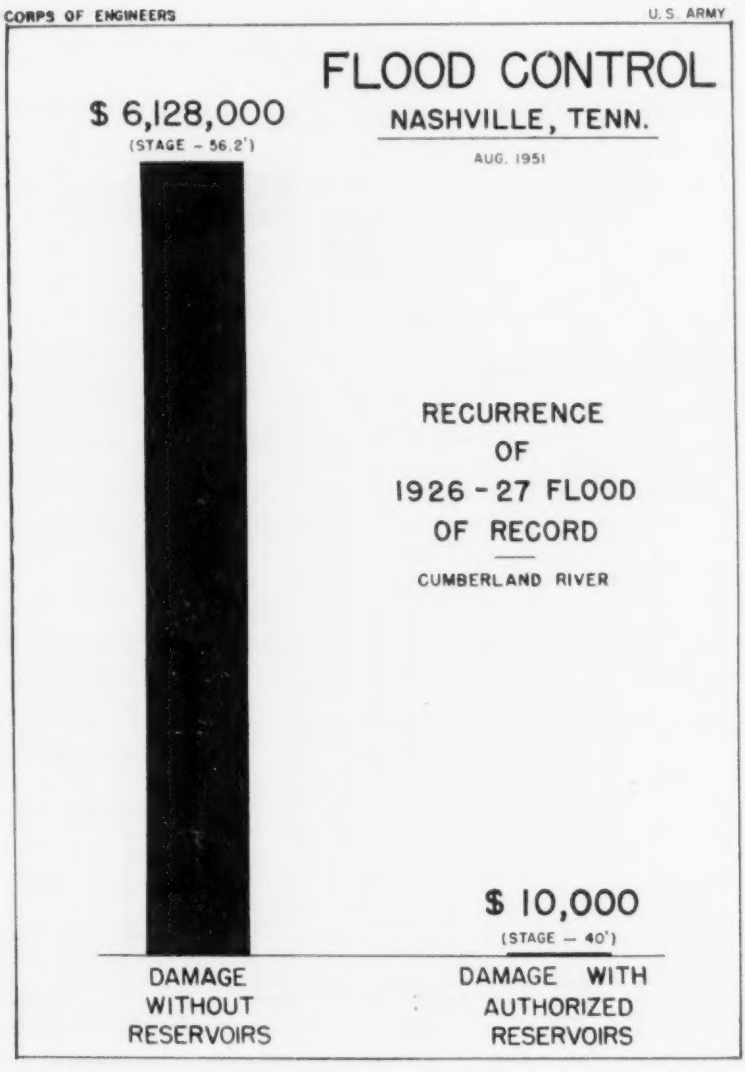

CORPS OF ENGINEERS
U.S. ARMY
POWER USAGE
NASHVILLE, TENNESSEE
RESIDENCES HEATED ELECTRICALLY
SOURCE OF DATA: NASHVILLE ELECTRIC SERVICE
104
901
2,833
5,097
8,806
12,925
1946
1947
1948
1949
1950
1951

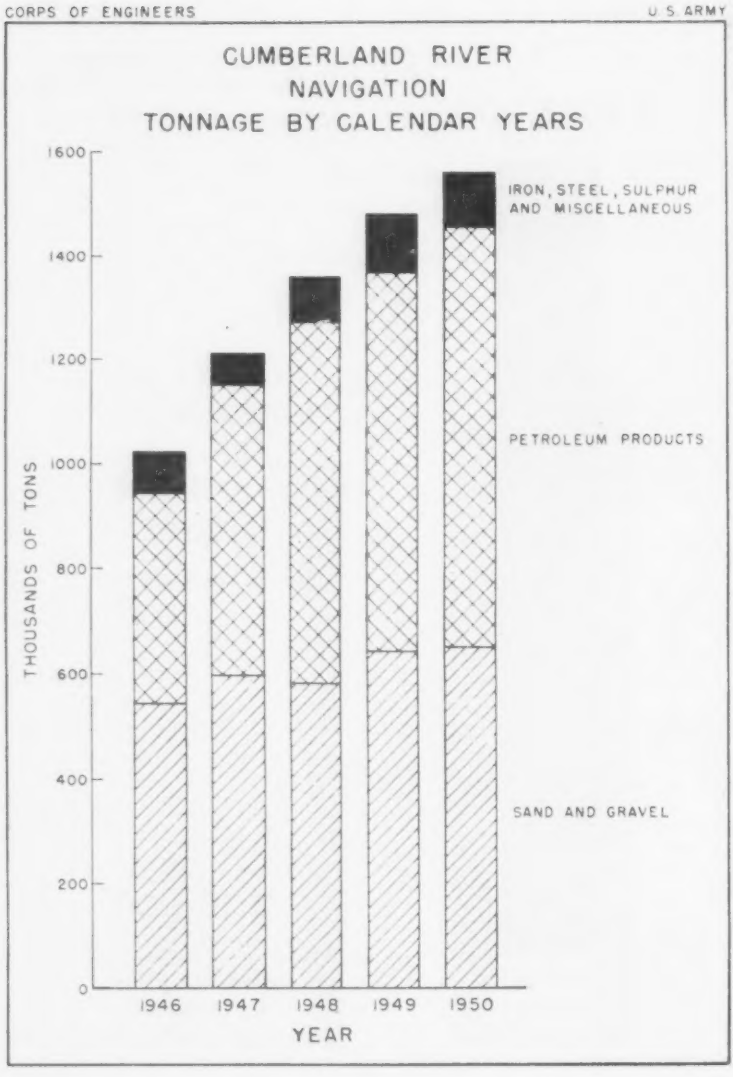

CORPS OF ENGINEERS
U.S. ARMY
POWER USAGE
NASHVILLE, TENNESSEE
APPLIANCES
LEGEND
1939
1951
SOURCE OF DATA: NASHVILLE ELECTRIC SERVICE
PERCENT OF RESIDENTIAL USERS
90
80
70
60
0
40
30
20
10
0
TV SETS
HOT WATER HEATERS
RANGES
REFRIGERATORS


CORPS OF ENGINEERS
U.S. ARMY
POWER USAGE
NASHVILLE, TENNESSEE
NUMBER OF CUSTOMERS
SOURCE OF DATA: NASHVILLE ELECTRIC SERVICE
NUMBER
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
45,500
95,000
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951


CORPS OF ENGINEERS
U.S. ARMY
POWER USAGE
NASHVILLE, TENNESSEE
MAXIMUM KILOWATT DEMAND
SOURCE OF DATA: NASHVILLE ELECTRIC SERVICE
300
250
200
150
100
THOUSANDS OF KILOWATTS
71,000
284,000
1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951


CORPS OF ENGINEERS
U.S. ARMY
POWER USAGE
NASHVILLE, TENNESSEE
RESIDENTIAL CONSUMPTION
FISCAL YEAR 1951
COMPARISON WITH OTHER CITIES
SOURCE OF DATA: NASHVILLE ELECTRIC SERVICE
KILOWATT HOURS
6,000
5,000
4,000
3,000
2,000
1,000
0
1,780
5,488
6,084
6,339
NATIONAL AVERAGE
2,100
MEMPHIS
KNOXVILLE
NASHVILLE
CHATTANOOGA


CORPS OF ENGINEERS
U.S. ARMY
FLOOD CONTROL
NASHVILLE, TENN.
AUG. 1951
$ 6,128,000
(STAGE - 56.2')
RECURRENCE
OF
1926 - 27 FLOOD
OF RECORD
CUMBERLAND RIVER
$ 10,000
(STAGE - 40')
DAMAGE
WITHOUT
RESERVOIRS
DAMAGE WITH
AUTHORIZED
RESERVOIRS


CORPS OF ENGINEERS
U.S. ARMY
CUMBERLAND RIVER
NAVIGATION
TONNAGE BY CALENDAR YEARS
THOUSANDS OF TONS
1600
1400
1200
1000
800
600
400
200
0
1946
1947
1948
1949
1950
YEAR
IRON, STEEL, SULPHUR AND MISCELLANEOUS
PETROLEUM PRODUCTS
SAND AND GRAVEL

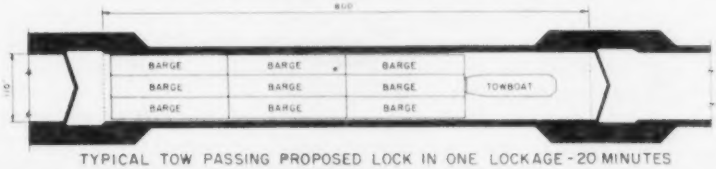
AUGUST 1951

CUMBERLAND RIVER TENN & KY

SECTION BELOW NASHVILLE

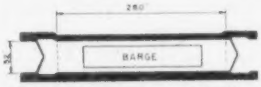
IMPROVEMENT FOR 9-FOOT NAVIGATION

(LOWER CUMBERLAND & CHEATHAM DAMS)

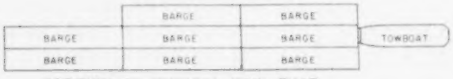


TYPICAL TOW PASSING PROPOSED LOCK IN ONE LOCKAGE - 20 MINUTES

PROPOSED LOCKS



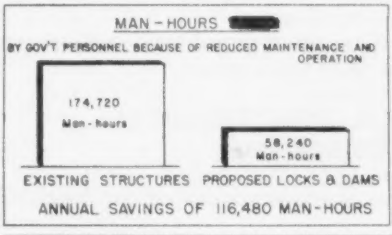
PORTION OF TYPICAL TOW THAT CAN BE PASSED IN ONE LOCKAGE - 35 MINUTES

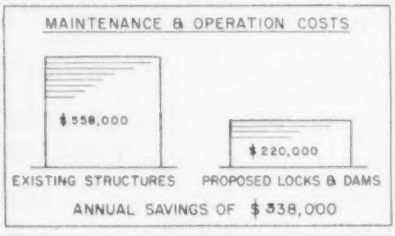


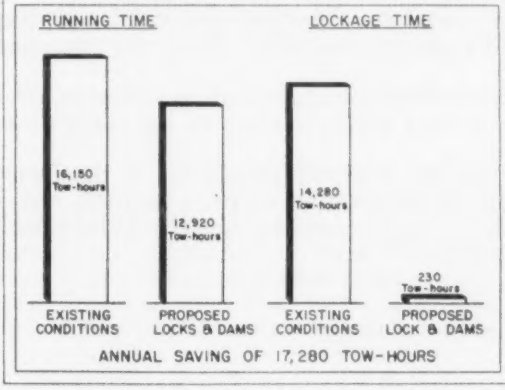
PORTION OF TYPICAL TOW THAT HAS TO WAIT FOR LOCKAGE

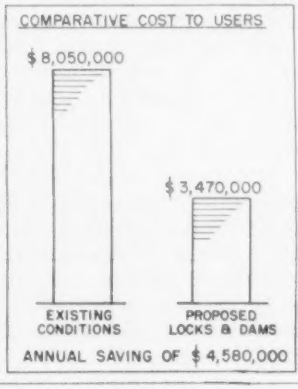
EXISTING LOCKS

(LOCKS A-F & NO. 1)









Senator McKellar. Will you call the next witness, please, sir.

Senator McClellan. The next witness is Mr. Harry Dyer. Will you come around, please, sir.

The Chair will announce this: We can run here until around 12:30. I will not be able to hold an afternoon session. We would like, if we can, without denying anyone a full opportunity to give his testimony, to conclude this hearing by 12:30 today. Otherwise, we will just have to set another date, and some of you will have to come back, because I cannot hold hearings this afternoon.

Just have a seat, Mr. Dyer.

Senator McKellar. General Chorpening, would you like to be heard?

General Chorpening. Senator McKellar——

Senator McClellan. You might make a statement at this point; I thought you had.

Senator McKellar. I did not know whether he desired to make one or not.

General Chorpening. I do not believe there is anything further I need to say. Colonel Walsh has described the project.

Senator McKellar. And he has done well.

General Chorpening. I have stated the position of the Corps of Engineers, and any questions that anyone may have I will be here to answer them.

Senator McClellan. All right, if you will just remain through the hearings so that if any question arises that we might want to have you give us information on, you will be available.

Mr. Dyer, you may proceed. Give your name and whom you represent and any other information that you have.

STATEMENT OF HARRY B. DYER, PRESIDENT, NASHVILLE BRIDGE CO.

Mr. Dyer. I am Harry B. Dyer. I am president of the Nashville Bridge Co., Nashville.

I am a graduate engineer, and I am a designer and builder of river boats and barges, and I hold a master's and pilot's license for operating river boats and barges.

I am a member of the river-improvement committee of the chamber of commerce in Nashville; I am a past president of the chamber of commerce in Nashville.

I was technical adviser to the American delegation of the International Congress of Water Transportation in Paris in 1947, and I have been interested in the river development on the Cumberland since I was old enough to paddle a canoe.

Senator McKellar. In which county were you born?

Mr. Dyer. Nashville.

Senator McKellar. Davidson County?

Mr. Dyer. Yes, sir.

I have no prepared statement, but I have studied and followed the situation the whole time, and I am convinced that there is an urgent need for the additional power that would be provided, both by the installation of power at Cheatham Dam and by the high dam proposed at the Grand Rivers site on the Cumberland River.

There is an urgent need for modern navigation on the Cumberland River that this high dam would provide, and the navigation facilities would be better with the one high dam than they would be with the two lower dams.

Senator McCLELLAN. What would be the principal cargo?

Mr. DYER. Right now the principal cargo is oil, but the cargo could be increased tremendously in all categories. Steel—we bring in a great deal of our steel now by river, and we would bring in a great deal more if it was more convenient to get it up through the river. The present locks are so inadequate because they are obsolete, and they are so located that it is difficult to navigate them.

You spend more time now with some tows in the locks than you do navigating the river. So, we urgently need the completion of modern navigation facilities in the Cumberland River.

Senator McCLELLAN. That would be just up to Cheatham, I believe——

Senator CLEMENTS. Carthage.

Senator McCLELLAN. I am sorry; Carthage.

Senator McKELLAR. That is considerably above Nashville.

Mr. DYER. The Cheatham Dam, which is under construction, together with the proposed high dam, will complete the navigation to Nashville and the Old Hickory will complete it up to Carthage.

Senator CLEMENTS. Will your present locks take Ohio and Mississippi River barges?

Mr. DYER. Only one at a time, and the long barges cannot come up there. We have built barges in the past which are too large to navigate the Cumberland River.

Senator CLEMENTS. The plans for the proposed high dam at Grand Rivers and one at Cheatham would permit you, would it not, to bring the Mississippi and the Ohio River barges right up to Carthage?

Mr. DYER. Yes, sir; make it much more feasible to come up to Nashville with equipment now in operation on the Mississippi and Ohio Rivers.

Senator CLEMENTS. There would be no transfer from one barge to another?

Mr. DYER. No, sir.

Senator CLEMENTS. To move up the Cumberland River as you do now.

Mr. DYER. No, sir.

Senator McCLELLAN. All right. Any questions, gentlemen?

Mr. DYER. In addition to the navigation facilities, the additional flood control which would be provided by that one high dam, I think, would be of tremendous benefit to the people below Nashville. It would not particularly affect us because it is below us, but the people down below that are entitled to flood protection the same as we are, and it would give a great deal of added flood protection to the lower section of the river.

Then I feel that there has not been enough stress laid on the recreational facilities that that lake would create there. I have spent a good deal of time on Kentucky Lake recently, and I have just been amazed at the growth of the recreational facilities and docks and things along Kentucky Lake there, and it certainly is developing into

a tremendous business. That is not taken into account in any of these reports.

Senator McCLELLAN. That is true with respect to all flood control and harbor projects, that the benefits from recreation are not included in measuring benefits against cost.

Senator McKELLAR. I think Colonel Walsh said a while ago that he was going to file a report saying what they were, did you not, Colonel Walsh? If not, I would like for you to do it.

Colonel WALSH. Yes, sir; I will.

Senator McKELLAR. Thank you, sir.

(The report referred to is as follows:)

Informal discussion with the State fish and game agencies and the United States Fish and Wildlife Service indicates that the lower Cumberland project would be definitely advantageous to game fishing and in augmenting the flocks of game birds using the established flyways over Kentucky Lake on the Tennessee River. Boating would also be encouraged by the existence of a large lake. Swimming, even with present polluted conditions in the Cumberland River, would be permissible in the lower third of a reservoir created by a high dam. It is estimated that probably 250,000 visitors would be attracted to the reservoir annually during the early years of the projects; this figure would increase substantially during the later years.

Mr. DYER. That is all I have, sir, unless you want to ask any questions.

Senator McCLELLAN. Any questions? Thank you very much, Mr. Dyer.

Mr. Coolidge?

STATEMENT OF R. N. COOLIDGE, PRESIDENT, CUMBERLAND RIVER SAND CO., NASHVILLE, TENN.

Mr. COOLIDGE. My name is R. N. Coolidge, of the Cumberland River Sand Co., Nashville, Tenn., former chairman of the chamber of commerce committee on the development of the Cumberland River; at present operator of boats and transportation on the Cumberland River.

There is very little that I can add to Colonel Walsh's report, and Mr. Dyer's, with the possible exception that I would like to emphasize the great benefits that have come to Nashville by your upper river development, and stress the lack of power facilities that we now have in the entire district in spite of the TVA.

There may possibly have been some confusion in the minds of the committee about this immediate change which the Senator's bill provides. There has been no change, as I understand it, in the Cheatham Dam project as such, except the addition of power to Cheatham Dam.

Senator McKELLAR. That is right.

Senator McCLELLAN. May I ask the engineers about that? I think we failed to clear that up.

Senator CARLSON. That is right.

Senator McCLELLAN. On this Cheatham, we got converted to the Cumberland project before we finished with the Cheatham.

Is there any change in the structure of the Cheatham Dam proposed here?

Colonel WALSH. There is no change, really, in the structure as far as the height or the lock. The power site is on the left bank going down the river, and the site is dug out of the river bank.

Senator McCLELLAN. It does not involve, then, a modification of the original plans, but rather an extension of them?

Colonel WALSH. Just an extension of them, we will say, of building the powerhouse on the left bank.

Senator McKELLAR. And two facilities. And that is the purpose of the bill.

Senator McCLELLAN. Yes. We overlooked that when we shifted from one project to the other.

Mr. COOLIDGE. The main change below that is simply the construction of a large dam at Grand Rivers to supplant other dams, lower dams, nonpower dams, which were purely navigation.

Senator McCLELLAN. In the original plans?

Mr. COOLIDGE. In the original. Of course, the original, as the engineers put it out, was for a high dam, but due to local pressure, or whatever it might be——

Senator McKELLAR. Objections.

Mr. COOLIDGE. They revised theirs in deference to possibly that objection.

Senator McCLELLAN. And the approved project was two low dams?

Mr. COOLIDGE. That is correct. Now, there is one high dam proposed at Grand Rivers.

Senator McCLELLAN. So this does modify your original approved project, to substitute the large dam for the two low dams, and to get additional power benefits, also at a substantial additional cost.

Mr. COOLIDGE. That is right.

There is one item which possibly was not emphasized in that new revision, or at least emphasized enough, and that is the equalizing possibilities of the Kentucky Lake and the lower Cumberland, which could utilize the Tennessee's power in the Cumberland powerhouse at Grand Rivers, and vice versa, and utilize the power possibilities of the Cumberland through the Kentucky Dam on the Tennessee River.

Senator CLEMENTS. You mean, that is by the suggested canal connection?

Mr. COOLIDGE. That is right.

So in considering the ratio of benefits to cost, which I know is very important to the committee, possibly that feature of it should be emphasized a little bit more.

I have nothing further to add, except to say that the navigation situation to Nashville and Carthage at present is almost in an obsolete and dilapidated condition. It cannot exist too long in its present status, and will cease to exist unless something is done to modernize it and keep it in operation. Much of it is on wood piling, and the hazard is great. And, of course, when a community learns to enjoy the benefits of economical transportation, if that ceases to exist, it would have a tragic effect.

That is all.

Senator McCLELLAN. Are there any questions?

Senator McKELLAR. Just one moment.

Senator McCLELLAN. Senator McKellar.

Senator McKELLAR. Mr. Coolidge, do you use either the lower river below Nashville or the river above Nashville for the transportation of sand?

Mr. COOLIDGE. That is right; both. We use above and below.

Senator McKELLAR. Above and below?

Mr. COOLIDGE. Yes.

Senator MCKELLAR. So you are familiar with it personally, and you know what you are doing about it from a personal standpoint?

Mr. COOLIDGE. That is correct.

Senator MCKELLAR. You use it?

Mr. COOLIDGE. Yes, sir.

Senator MCKELLAR. All right, sir. Thank you very much.

Senator MCCLELLAN. Does the sand come from that river?

Mr. COOLIDGE. Yes, sir. Of course, we have our transportation department, too, by which we bring sulfur from Texas, for instance, which is utilized locally, and steel, as Mr. Dyer pointed out. And that should be emphasized, too. It used to be that Nashville was rather restricted in its market of procurement from Birmingham and places in the South. And now with that transportation, it opens up the entire resources of the Nation: Pittsburgh, Kentucky, and so forth, all of which are available to Nashville, and will be increasingly available as we can bring larger barges and good loads in there, which is a tremendous economic benefit.

Senator MCCLELLAN. Very well. Thank you very much.

Mr. Herbert, come around, please.

STATEMENT OF JOHN HERBERT, W. D. BUSH & CO., AND T. L. HERBERT & SONS, NASHVILLE, TENN.

Mr. HERBERT. I am John Herbert, with W. D. Bush & Co., brick manufacturers, and T. L. Herbert & Sons, in Nashville, Tenn. We manufacture face and common brick and building tile, and we dig our raw material from the river bottom land around Nashville there, and we have in the past had a great deal of trouble with inundation of our clay field. This past year, we had as little trouble as we have ever had, and we think now that with the dams that we have already completed, we will not have very much trouble any more. That goes for the people who are in the lumber business and the rest of the businesses there that occupy the lowlands.

We are very much interested in the Stones River project up there, to take away that possibility of flash floods, away from the rest of the water that is coming down the river.

Senator CLEMENTS. I understand that that is Stewart's Ferry?

Mr. HERBERT. Yes, that is Stewart's Ferry.

From the river angle we produce sand and gravel out of the Cumberland River and have for something like 50 years, up and down the river, both. We are getting farther and farther away from Nashville, as the material deposits have been depleted, and we now have to go through several of these smaller locks. And with the new boats that we have, and the powerful boats, it takes almost as much time going through the locks as it does while we are under way in the river.

Senator MCKELLAR. Will you wait just one moment while I ask the engineers this question?

How much would it cost to put in modern locks instead of the old kind, say, between Nashville and Carthage or Nashville and Celina? I know you do not have it now. But could you get it and put it in the record?

Colonel WALSH. Sir, do you mean to renovate these present locks?

Senator MCKELLAR. Yes, sir. It would cost a good deal of money, would it not?

Colonel WALSH. Yes, sir; it would.

Senator MCKELLAR. I wish you would look into it and put it in the record in your testimony.

(The information requested is as follows:)

The cost of replacing the existing locks below Nashville in kind is estimated at $17,227,000; this does not provide for bringing the structures up to modern standards. Such as replacement in kind would yield only a small part of the navigation benefits from the improvements being considered or already authorized.

Colonel WALSH. In fact, it would have to be a completely new construction by bulkheading and building completely new locks, to bring it up to modern standards.

Of course, when we put in Old Hickory, you know, it substitutes for the old locks all the way up.

Senator MCKELLAR. It does?

Colonel WALSH. Yes, sir. It substitutes for two locks between Cheatham and Nashville, and the high dam replaces five locks.

Senator MCKELLAR. Further up the river, so to speak, because it runs north?

Colonel WALSH. It completely replaces those locks.

Senator MCKELLAR. Thank you very much. Excuse me for having interrupted you.

Mr. HERBERT. That is about all I have to say, other than that as this sand situation gets worse, we are going to have to go farther and farther for our materials, and these river boats that are coming up the river there, if we have to go to the Ohio River, it will save lots of money going through two locks instead of all those locks that we have to come through, seven, I believe, and that is on the upper river, too.

Senator CLEMENTS. You mean by the building of these two dams, you eliminate seven locks?

Mr. HERBERT. I believe that is correct.

Colonel WALSH. That is correct.

Senator MCKELLAR. I believe that is what the engineers said.

Mr. HERBERT. Then on the upper river, the Old Hickory Dam, that would eliminate a lot of locks up there, too. I do not know exactly how many. It would be three or four. It just depends on where the location of your deposits is, where you are digging.

Senator MCCLELLAN. Are there any questions?

Senator CARLSON. No. That was a very good statement, Mr. Herbert.

Senator MCCLELLAN. Thank you very much, Mr. Herbert.

Senator MCKELLAR. Thank you, sir.

Senator MCCLELLAN. Mr. Evans.

STATEMENT OF SILLIMAN EVANS, PUBLISHER, NASHVILLE TENNESSEAN, NASHVILLE, TENN.

Mr. EVANS. Mr. Chairman and gentlemen, for the record I am the publisher of the Nashville Tennessean at Nashville, Tenn. Of course, from a civic standpoint, I am intensely interested in the development of the Cumberland.

Senator McKellar has long been an advocate of it and has worked for it. I have for years tried to locate industries in Tennessee. But the TVA is absolutely at its absorption point as far as the distribution of power to industry is concerned. They have declined recently, to

my knowledge, a dozen industries which would make war materials and defense materials. But they simply do not have the power.

I am a member of the President's Council on Civil Defense. That Council is made up of the Governors of the States of Minnesota, Ohio, and Maine, and the mayors of Pittsburgh, Chicago, and Seattle, myself, and two other members. Of course, we meet frequently, and of course, we are informed by the Defense Department of the great peril we are in and the great need for power.

So I should like my testimony to be considered more as a member of that Council than as a citizen of Nashville.

Senator McKellar. Mr. Evans, could I ask you this question?

As you know, the House left out in the appropriations bill the Cheatham and the Old Hickory Dam, and the Carthage Dam. The Carthage Dam was for planning money. The others were for very substantial amounts for continuing work on the other two.

I am tremendously interested in what the House does. I wonder if you have talked with the various Congressmen or any of the Congressmen concerning their activities in getting the House to agree to what the Senate has done.

Mr. Evans. I have.

Senator McKellar. I am tremendously interested in it, and would welcome any help in the world when we come to conference, because we have a conference ahead on that bill. The House has not yet appointed its conferees. But Mr. Cannon will be one, and there will be a number of worthy and high-minded gentlemen.

Senator McClellan. Senator McKeller, I will do a little horse trading with you. If you keep my projects in, I will get my Congressmen to vote to keep yours in. If that is logrolling, let us logroll.

Mr. Evans. That is always a good idea, Mr. Chairman.

Senator McKellar. Since 1914 I have been cooperating with these western Senators over there, and I want to continue to do it. But we cannot count the money that is here appropriated by the Senate until the House agrees to it, and I am just tremendously interested in the activity of our House Members, and I am sure they will.

Mr. Evans. I have talked to most of them.

Senator McKellar. You have talked to most of them?

Mr. Evans. Yes, sir, including Percy Priest.

Senator McKellar. Yes, sir. Percy Priest is a very excellent man to talk to.

Mr. Evans. Percy is going to do everything that he can for us.

Senator Dworshak. Mr. Evans, I think the chairman of the Senate Appropriations Committee is most influential, too, and I am sure the people of Nashville appreciate that.

Senator McKellar. You are very kind to say so.

Mr. Evans. I think that the matter has been pretty well covered. Obviously and frankly, there has been opposition to this high dam from some States on the basis that it is a differential in power which has attracted interest in Nashville and throughout the whole State of Tennessee. In some instances, that has been true, and in some instances industries have been transplanted. But they are minor.

But I have forgotten that phase. That is all over. The whole thing is defense now.

I want to point this out to you. Just yesterday or the day before yesterday, the Navy announced the location at Bristol, Tenn., of the Navy guided missiles, which will probably use 100,000 kilowatt hours. At Huntsville, Ala., the Army ground forces' guided missiles laboratory and proving grounds will be located, plus the Redstone Arsenal. At Oak Ridge and Paducah—this is in the Senator's State—one of the greatest plants in the world would be at Paducah, depending on TVA power.

Reynolds Aluminum, which is making practically everything it produces for national defense, will be there, as will Alcoa, the Aluminum Co. of America. It is the world's largest rolling mill, and practically all of it goes into defense.

At Columbia there are three different plants for the extraction of basic phosphorus, practically all of which is allocated solely to defense. It is an ingredient which is necessary in all ammunition. And one new one has been ordered, not on the part of the Monsanto Chemical Co. I am on the board of directors with Mr. Queeny, who is the president of the Monsanto Chemical Co. They do not want to build it, but they have been told to build it, and that will use a lot of power.

At Milan, Millington, and Kingsport, Tenn., there are huge ordnance works, all of them using TVA power.

At Tullahoma, the Army engineering center—that is where the President made his Korean speech last month—they will use from 250,000 to 400,000 kilowatt-hours in the first stages, now, of operation. That is more power than the city of Nashville uses in a day.

I think that pretty well covers it. I look on this thing, gentlemen, as not just a TVA particularly, but as a defense project, which is badly needed. And I speak from the information that I have as a member of the President's Council on Defense.

I think that Senator McKellar pointed out that reference has been made to the lower Cumberland. It may be confusing to everybody but you, Senator. The Cumberland and Tennessee Rivers are two of the four rivers in the Western Hemisphere which flow northward. So we refer to the lower Cumberland—as a matter of fact, you can see from the map that it goes north.

Senator CLEMENTS. Mr. Evans, both of these gentlemen on the other side of the table there were in the House, and I am sure that they have heard Congressman Rankin talk about the two rivers that flow north, and he wants to tie in the two with the Tombigbee.

Senator CARLSON. I was wondering if we were not going to the Tombigbee before we got through.

Mr. EVANS. I am for the Tombigbee project. But this immediate thing is an emergency defense measure. Senator McKellar has been very able and wise in urging it.

Senator MCCLELLAN. I think that there is one thing that we have failed to develop so far.

I would like to ask the Corps of Engineers, suppose this project of the lower dam is authorized. How long will it take to construct it? You are talking about its importance to defense. How long will it take to get it into production of power?

General CHORPENING. The projected construction schedule would be somewhere between 3 and 4 years.

Senator MCCLELLAN. In other words, it would be about 4 years before you could expect to have it in operation.

General CHORPENING. Yes, sir. Now, we might be able to shave a little if we had unlimited funds to get it done, regardless of cost.

Senator MCCLELLAN. But this is just an authorization. You have to get the appropriation. But I thought since it was being emphasized from the standpoint of national defense, that the record should show how long it would take for it to come into production, and how long it would take to construct it and get the benefits in the national defense effort.

General CHORPENING. If we were going to start it immediately, we could probably get the first unit in late in 1954.

Senator MCKELLAR. Do you have to make any more plans, or are your plans all completed?

General CHORPENING. I will ask Colonel Walsh to give the status of any planning in connection with that.

Colonel WALSH. Geology surveys need to be made, and the design of the dam and power house. Also reservoir acquisition and relocation problems studied.

Senator MCKELLAR. You have the money for that?

Colonel WALSH. No, sir; we have not.

Senator MCCLELLAN. You have not actually made plans for the structure?

Colonel WALSH. No, sir.

General CHORPENING. You see, we have had no authorization on it; so all we could do up to now is to make the general studies looking toward a report in connection with the authorization.

Senator MCCLELLAN. How much would it take to plan the project, do you think? How much planning money, assuming it was authorized?

Senator MCKELLAR. Just in a general way, because you could not be active in it.

Senator MCCLELLAN. That is what I meant.

Colonel WALSH. You mean, sir, planning, and design, too?

Senator MCCLELLAN. After you get a project authorized and get ready to construct it, you ask for planning money.

Colonel WALSH. Yes, sir. About $1,200,000.

Senator MCCLELLAN. About $1,200,000 to plan the project?

Colonel WALSH. That is right.

General CHORPENING. But we would not need all of that amount of planning money before we could initiate construction.

Senator MCCLELLAN. How much would you need before you could initiate construction? That is really what I am getting at.

General CHORPENING. I would say $400,000 or $500,000 would be ample. Then we could go into construction.

Senator MCCLELLAN. And you would carry on the planning out of your construction funds?

General CHORPENING. Yes, sir.

Senator MCKELLAR. General, may I ask you if you have ever made application to the Bureau of the Budget to get a budget estimate for the planning money?

General CHORPENING. On this project?

Senator MCKELLAR. On this particular project. If you have not, I wish very, very sincerely that you would. You have been so cooperative in all these plans generally that I know I am burdening you with this particular one from Tennessee, but I would like the best in the world to get a budget estimate for it.

Senator McCLELLAN. Senator McKellar, I think before we can ask the budget for planning money, we have to cooperate with you here and get this authorized.

Senator McKELLAR. That is true here. But after it is authorized by the Senate, we can go ahead.

Senator McCLELLAN. Yes.

Senator McKELLAR. Mr. Evans, I would like to ask you this: Is it not your understanding that the Tennessee Valley Authority, which you spoke of just awhile ago, had requisitions or requests for more power than they have?

Mr. EVANS. Absolutely.

Senator McKELLAR. Getting right down to it, the demand is very, very great?

Mr. EVANS. That is right.

Senator McKELLAR. Now, when the steam plant comes in at Johnsonville——

Mr. EVANS. They will still have a deficit, sir.

Senator McKELLAR. Even after that?

Mr. EVANS. So Gordon Clapp tells me.

Senator McKELLAR. How long would it be before the Johnsonville steam plant will be in operation?

Mr. EVANS. Mr. Herbert, how long will it be? You are familiar with that.

Mr. HERBERT. I do not know, sir.

Mr. COOLIDGE. It is supposed to be July 1952.

Senator McKELLAR. About a year from now; nearly a year?

Mr. COOLIDGE. They have requested their first coal deliveries, and I think that could be taken as being the criterion of it.

Senator McCLELLAN. And that is the Johnsonville steam plant?

Senator McKELLAR. The Johnsonville plant, to firm up the water power.

Mr. COOLIDGE. That is right. It is the largest steam plant in the world.

Mr. EVANS. It is over on Kentucky Lake. And may I irk the Senator by saying that all of Kentucky Lake is in Tennessee, except the dam. But I am glad it is named after Kentucky. It is a great State.

Senator CLEMENTS. Mr. Evans, sometime we want to invite you over to visit the two Kentucky parks on Kentucky Lake, and I want you to say then whether or not they are in Tennessee.

Mr. EVANS. I have been there. They are in Kentucky, yes. I have been in both of them. I have a boat, and I spend a good deal of time there.

Senator CLEMENTS. We want you to spend more time over there, too.

Mr. EVANS. Thank you. I enjoy it very much.

Senator McCLELLAN. Are there any other questions?

Senator CLEMENTS. I would like to ask——

Mr. EVANS. I would like to say this—pardon me, Senator.

Senator CLEMENTS. Go right ahead.

Mr. EVANS. I assume that this is in the record.

Senator McKellar and I have been the earliest fighters, I think, for the TVA, and I am quite familiar with the personnel and the policies, and so on and so forth.

TVA urgently needs this power. I suppose there is a letter from Chairman Clapp in the record to that effect. But you remember the President appointed a committee——

Senator McCLELLAN. I think probably there is a letter from Mr. Clapp in the statement presented by Colonel Walsh.

Colonel WALSH. That is correct, sir.

Senator McCLELLAN. I have not read it, but I think it is in there.

Mr. EVANS. I remember that the President asked the TVA to make a survey, and they made a survey, and they recommended this project to be done by the Army engineers.

Senator CLEMENTS. I would like to ask Colonel Walsh a question, Mr. Chairman, if I may.

Senator McCLELLAN. Very well.

Senator CLEMENTS. Colonel, there has been a good deal said about the lower Cumberland Dam being needed to meet defense needs. Am I not correct in saying that this dam and the Cheatham Dam are integral parts of the flood control over-all plan for the area?

Colonel WALSH. That is right, sir.

Senator CLEMENTS. For the watershed of the Cumberland River?

Colonel WALSH. That is right, sir.

Senator CLEMENTS. Without the construction of these or dams at other points, you will not have a complete flood control project in the Cumberland River Basin?

Colonel WALSH. Yes, sir.

General CHORPENING. Neither will we have a complete navigation project.

Senator CLEMENTS. That is correct.

Am I correct in thinking that by the high dam at Grand Rivers, you will have a much greater flood control than you will have with the two low dams?

Colonel WALSH. Absolutely, sir.

Senator CLEMENTS. Are you going to give us some information for the record to show how much in dollars and cents of value that flood control is, of the high dam over the low dams?

Colonel WALSH. $2,000,000 a year, sir, is the flood-control value of the high dam; there is no flood-control value for the low dams.

Senator CLEMENTS. $2,000,000 annually?

Colonel WALSH. Yes, sir.

Senator McKELLAR. Colonel Walsh, all of these dams are multi-purpose dams except——

Colonel WALSH. Except Rossview.

Senator McKELLAR. Only one?

Colonel WALSH. Yes, sir.

Senator McKELLAR. I think that is very fine.

Senator McCLELLAN. Senator Dworshak, do you want to ask Mr. Evans some questions?

Senator DWORSHAK. Mr. Evans, in the report on this project, there is a telegram from the Governor of Tennessee to the chairman of this committee dated May 2, 1951, which refers to the fact that, "objections raised by one of my predecessors have been removed."

Obviously there has been some opposition in the past to this development.

Mr. EVANS. Yes.

Senator DWORSHAK. Can you tell us what it was and why it has been eliminated, briefly?

Mr. EVANS. Opposition to public power, plus the fact that many of the landowners, and some of the finest estates in Tennessee, are on the Cumberland River. It would inundate beautiful land.

Senator DWORSHAK. How many acres?

Mr. EVANS. I do not know. Hundreds. And that is just too bad, but this is a national-defense matter. I have friends out at those estates whom I visit nearly every Sunday, and have a few blows for liberty, as John Garner used to say. I hate to see it happen. I sincerely do.

Senator DWORSHAK. Is that the basis of the objections in the past, the flooding of farms?

Mr. EVANS. I would say so; yes. And then the opposition to public power. As a matter of fact, I know that two of these gentlemen who testified this morning in favor of this project have been opposed to public power, but in the national-defense emergency, they are sincerely and firmly for this development, as they testified.

Senator DWORSHAK. That issue is pretty well settled in the Tennessee Valley, is it not?

Mr. EVANS. No. There are still a lot of people that say, "We are glad it's here, but we're agin it."

Senator MCKELLAR. Senator, let me tell you what the situation is in TVA. It is not so bad now. But we had the same sort of situation in Tennessee that the engineers had in northern Kansas. They had authorized a dam on Tuttle Creek in northern Kansas which would have protected Kansas City this time if it had been built.

Is that not correct, General?

General CHORPENING. Yes, sir.

Senator MCKELLAR. I know that General Pick testified, too, on it.

Senator CLEMENTS. You can direct those questions to Senator Carlson.

Senator CARLSON. That is correct. The Senator is making a correct statement. It does have 55,000 acres of some of the finest land that this Nation has. As I say, I regret very much to see that flooded, but I think that it is sensible.

Senator MCKELLAR. And it is bad to take the homes. It is a great deprivation to a man to be deprived of his home. We understand that. Everybody can understand that. It is perfectly natural.

Senator CARLSON. That is correct.

Senator MCKELLAR. But in the conduct of the public business, in the best way, these dams have proved to be of great success. We just have to keep it up, and there is no doubt now but that the dam at Tuttle Creek in Kansas will be built, Senator.

Senator CARLSON. That is correct. I appreciate that. I hope so.

Senator MCKELLAR. I favored it before the flood occurred, and I am in favor of it still.

Senator CARLSON. Mr. Chairman, on that point, before the Senator leaves it, if I may, I want to say that we in Kansas are indebted to the splendid support we did receive from Senator McKellar and the committee in regard to the projects that were before his committee. We appreciate it very much.

Senator MCKELLAR. Thank you.

Mr. EVANS. Of course, the building of all those dams by the TVA probably caused the largest movement of farmers, as it inundated village after village. And some 4,000 or 5,000 bodies had to be

removed. But the TVA was very, very efficient and fair in remuneration, and most of the farmers got more money than the land was worth. But it was not being extravagant.

Senator McCLELLAN. They were also greatly inconvenienced. They would have to compensate a little for that.

Mr. EVANS. Yes. I know a lot of them, because I go up and down that, and I know that they are happy in their new locations.

Senator McKELLAR. I think that one of the best illustrations of the situation about taking a man's land was when I first introduced a bill to build a dam at Muscle Shoals, Senator Shields was our senior Senator.

Mr. EVANS. I knew him.

Senator McKELLAR. You knew him well?

Mr. EVANS. Yes.

Senator McKELLAR. And a fine man he was. He had a beautiful home near Tate Springs in Tennessee, and he said that he just could not vote with me because eventually his home would be taken. And that was true. And I never felt sorrier in my life for a man when his home was being taken. His family had lived there for generations. And it was taken, and not only that, but Tate Springs itself was taken that very day.

Senator McCLELLAN. Thank you very much, Mr. Evans.

Mr. EVANS. Thank you, Mr. Chairman.

Senator McKELLAR. You have been very enlightening.

Senator McCLELLAN. Mr. Diehl, come around, please.

We have just two more witnesses, and I want to give them an opportunity. Maybe we can get through today.

Very well, Mr. Diehl.

STATEMENT OF ROBERT B. DIEHL, PRESIDENT, FLOOD CONTROL COMMISSION OF KENTUCKY

Mr. DIEHL. Mr. Chairman and gentlemen, I am Robert Diehl, chairman of the division of flood control and water usage of the State of Kentucky, and also chairman of the Kentucky State Chamber of Commerce water resources committee.

We have made an exhaustive study of this problem and a report is included in your brochure that was handed to you by the United States engineers.

Senator McCLELLAN. Do you have a statement?

Mr. DIEHL. It is this report that our division of flood control made, and it is included in there and is quite comprehensive, I believe. I sincerely trust you will all find it possible to read it.

Senator McCLELLAN. We are going to have this entire document submitted here by Colonel Walsh printed in the record. So it will appear in the record.

Mr. DIEHL. And as you do read our report, of the change from the low dam to the high dam, it will occur to you that in 5 years there has been a considerable change in opinion in Kentucky as to whether or not there should be a high dam or a low dam. It is interesting to me what brought that change in opinion about.

Previously I would say, personnaly, that that area down there has a rather medium to low economic productivity. There was not too much productivity there until the Kentucky Dam was put in. Now

there has been an accelerated increase in the economic productivity of the entire area.

The character of the people is changing, much to the better. The whole Cumberland Valley people are now seeing the effects of the change in economic capacity along the Tennessee River.

Senator McCLELLAN. They have had an economic face-lifting?

Mr. DIEHL. It has completely reversed itself in 5 years, and now the whole area is quite anxious to have the higher dam and have the benefits derived from the larger body of water. Of course, it is very beneficial, I believe, to the State of Kentucky. It makes it possible for us to have considerably more income from the tourist trade, which is vitally important to a mountainous State, such as ours.

It justifies our putting in additional access roads, additional accommodations for tourists, and a considerable increase in revenue in our State.

The report here will indicate that we find that the power is necessary and I think there will be very, very little, if any, intelligent opposition to a high dam as opposed to the low dams.

Senator CLEMENTS. You said you were chairman of the flood control board. What is your occupation?

Mr. DIEHL. I am president of the Diehl Pump & Supply Co. We are water-supply contractors.

Senator CLEMENTS. You are an engineer?

Mr. DIEHL. Yes, sir.

Senator CLEMENTS. Did I understand you to say that you were an officer in the Kentucky State Chamber of Commerce?

Mr. DIEHL. Yes, sir; chairman of the water resources board.

Senator CLEMENTS. And in both capacities, you favor the high dam at Grand Rivers?

Mr. DIEHL. Yes, sir.

Senator CLEMENTS. And the flood-control board favors the building of the high dam at Grand Rivers?

Mr. DIEHL. Yes, sir.

Senator DWORSHAK. The Governor of Kentucky in 1946 was opposed to the high dam at that time.

Mr. DIEHL. Yes, sir. And the reason was the opposition locally.

Senator CLEMENTS. The present Governor of Kentucky, is he opposed or in favor of the building of the dam at Grand Rivers?

Mr. DIEHL. He forwarded a letter of transmittal that is in here with our report.

Senator CLEMENTS. Which speaks for itself?

Mr. DIEHL. Which speaks for itself.

Senator DWORSHAK. Senator, I raised the point when Mr. Evans was testifying, and I do so now again, merely because I am very much interested in knowing why in the lapse of 5 years there has been a transition from opposition to approval of this dam. I was merely trying to develop the record.

Senator CLEMENTS. I thought that Mr. Diehl's statement a minute ago was right on that point.

Mr. DIEHL. I would like for you to come down and see it. It is almost unbelievable to realize the changes that have taken place in that area in the past 10 years.

Senator CLEMENTS. Mr. Diehl, I would like to ask you another question. This is not for the record, but for the sake of the membership. You are a Republican?

Mr. DIEHL. Yes, sir. I was appointed by Senator Clements when he was our very good Governor.

Senator CLEMENTS. I just wanted to get the record straight.

Senator CARLSON. He used good judgment, I am sure.

Senator DWORKSHAK. It is interesting to note, Mr. Chairman, that Republicans are available for appointive jobs, if not for elective jobs.

Senator CLEMENTS. We have a good many of those in our State.

Senator MCKELLAR. I would like to note that we have two Republican Congressmen from the State of Tennessee.

Senator CLEMENTS. We have in Kentucky, too.

Senator MCCLELLAN. Thank you very much, Mr. Diehl.

Mr. DIEHL. Thank you, sir.

Mr. WHITE. You may proceed, Mr. White.

STATEMENT OF POLLARD WHITE, CADIZ, KY.

Mr. WHITE. My name is Pollard White, and I am from Cadiz, Ky. I am just a plain farmer and a small merchant at Cadiz, and I do not know that I can say that I represent anybody officially.

Senator MCCLELLAN. You probably know the sentiment fo the people in your community.

Mr. WHITE. I think I do.

Senator MCCLELLAN. Yes.

Mr. WHITE. I have been interested in the matter from the very beginning. I started out when sentiment was opposed to the high dam.

I remember very well back in Governor Willis's administration when he got the system changed. The original idea was to have two small dams, or medium height dams, one at Kuttawa and one at Dover. The Army engineers originally advocated the high dam. That was their original recommendation.

Senator MCCLELLAN. Yes.

Mr. WHITE. But Governor Willis got this changed to two medium dams.

As soon as the farmers got to thinking about it, we found out that these medium dams were going to do us as much damage as the high dam would, without any of the compensation.

Senator MCCLELLAN. As far as the loss of land and inundation?

Mr. WHITE. Well, there would not be as much of that land that would be covered, but it would have been ruined. I speak as a farmer, because I have lived within a stone's throw of the river all my life.

Senator CLEMENTS. You mean, Mr. White, that the good land that would be taken by either dam was what might be termed the river bottom land?

Mr. WHITE. I think that——

Senator CLEMENTS. Would that not be taken whether you built the low dam or whether you built the high dam?

Mr. WHITE. It would have been taken and ruined in either case.

Senator MCKELLAR. May I give you an illustration and give the committee an illustration?

It was brought out in the Appropriations Committee that in Kansas where these gentlemen are the owners of property there—and I can well understand how they felt about it—they were so tremendously determined against building the dam that they evolved a plan of

their own to build smaller dams higher up, and when they did that, I believe that the Corps of Engineers looked it up and found that more land would be taken by the smaller dams, if I remember the figures rightly, 46,000 acres to be taken by the Tuttle Creek Dam and only 54,000—8,000 more—taken by the smaller dams farther up.

Mr. WHITE. I think that the most important thing that I can say is that the farmers—and I think I know the sentiment of the farmers—have attended these meetings in every county from Marshall up to Davidson—and the sentiment——

Senator CLEMENTS. Give us the names of the counties, Mr. White, where you have attended the meetings.

Mr. WHITE. We started in Marshall County, where the Kentucky Dam was situated, and then there is Lyon County; then Trigg County, Ky.; Stewart County, Tenn.; Cheatham County, Tenn.; and Davidson County.

I have attended meetings in all of these counties, and the sentiment of the farmers, the people who own the land, is overwhelmingly in favor of the high dam. If there is any development of any kind, they are in favor of the high dam.

Senator CLEMENTS. Do I understand you to say that if you carry out the flood-control projects in the Cumberland River Valley, the farmers in the area will lose the land to the development, but they prefer the high dam over the low dam?

Mr. WHITE. That is right.

Now, there have been a lot of things brought out here this morning, but there is one feature that I have not heard discussed at all, and I will mention that. The situation of the river bottom farmers is very unfavorable at this time.

In my 55 years that I can remember the river, the river has greatly changed. The channel is filling up. The log jams and the gravel and the sand and the things like that are making farming in these river bottoms much more hazardous than it used to be.

I have 200 acres of overflow land, and it is very hazardous to try to raise crops there. We have gotten down to where we do not try to raise anything but corn. Scientific farming, that has come about in the last decade or two, has been all to the advantage of the upland farmer. None of that has added anything to the value of these low bottom lands.

We cannot grow legumes. We cannot fertilize, because if you do, the overflow will take it away the next time, and it has gotton so that we lose so many of our crops.

Two years ago the river got over my corn crop, practically all of it, three times during the growing season. Last year it got over it a time or two. It has gotten to where you just cannot count on these bottoms.

The farmers have gotten used to that. And although the upland has greatly increased in value, I would say that in the lands in Kentucky in my section, the desirable upland has increased three or four times what it was 25 years ago, but you can hardly give that bottom land away.

Senator CLEMENTS. You live in a county that has been affected some, I take it, by the construction of the Kentucky Dam on the Tennessee River?

Mr. WHITE. Yes, sir. I knew all of those people.

Senator CLEMENTS. Do you see any change in the economic conditions of that area since the construction of the Kentucky Dam?

Mr. WHITE. We had people back in that day who felt that was going to ruin us, but just the opposite has taken place. Things are booming in our county. People like the TVA. Those who were driven out by the TVA, who lost their lands when the Tennessee River bottom was taken away in Trigg County—those people had to be moved. I do not know of a single one of those people but who is better off today than he was then. And I do not know of a single one that would be willing to go back down there.

Senator CLEMENTS. Mr. White, how much land did Trigg County lose? Trigg County is your home?

Mr. WHITE. Yes, sir; Trigg County is my home.

Senator CLEMENTS. How much land did Trigg County lose?

Mr. WHITE. To the TVA and that development?

Senator CLEMENTS. Yes.

Mr. WHITE. Senator, I just could not say.

Senator CLEMENTS. Would you estimate what percentage of the land of your county was taken? A very sizable percentage was taken?

Mr. WHITE. Trigg County has been hit pretty hard.

Senator CLEMENTS. Let me ask you this. You say that a good deal of land has been taken. Is your business better or worse since that time?

Mr. WHITE. Business is better.

Then there is another phase of this that has meant a great deal to us, which is the recreational side of it, and the amount of tourists that are coming in there, and these homes that are being built on the lake, and all things like that. It is just enormous. You cannot get a room to stay in at night down there anywhere. The hotel cannot accommodate the people. Traffic is enormous.

During the 3 days over July the Fourth, there was one point down there, I think it was at Hardin, at the intersection of the highways, and during those 3 days, there were 44,000 cars that passed that intersection. That is enormous. And I think the beautiful feature of this development of the lower Cumberland is the fact that the waters of these two rivers would be coordinated. They will be thrown into one system. We can get into a boat right at my house and we can go anywhere in the world if we want to go. We could go to New York, or you could go to any place up and down either one of those rivers. It would be a grand thing. I do not think that there is anything like it in the world. I want to say for the people in my community, the farmers that are concerned all up and down the lower Cumberland River from Cheatham County, from Ashland City on down to the dam, I think that 99 percent are in favor of the high dam. I think that that is true. In fact, I do not know of any more opposition to it. I think that the opposition to the high dam has practically vanished.

Senator CLEMENTS. Mr. White, let me ask Mr. Diehl a question.

Mr. Diehl, did not the flood control board hold hearings down in the area of this proposed dam to get the sentiment of the public?

Mr. WHITE. I was there that day.

Mr. DIEHL. Yes, sir. We had hearings at Dover and at Paducah, and we listened to all comers. And I can assure you that it was a

very interesting meeting. The opposition was not the intelligent type of opposition. They were only opposed to it because their granddaddies were opposed to it.

Senator CLEMENTS. Do I understand that at these meetings those folks who expressed some opposition, then, were in favor of the high dam if one was to be built?

Mr. DIEHL. Frankly, they said they didn't want any damn dams, but if any damn dams were built, they wanted a high dam.

Mr. WHITE. I would like to say that in regard to that meeting, the open hearings that the flood control board held, there were no farmers there. What people were there were a few city people. There were no farmers there.

Senator CLEMENTS. You mean that expressed opposition to it?

Mr. WHITE. There was not a farmer there, with one exception, a man who had a little land. But there were not but a few there of any kind, maybe a half dozen. And all of them were city people. The farmers were not there.

Senator MCCLELLAN. Are there any further questions, Senator Carlson?

Senator CARLSON. No.

Senator MCCLELLAN. Thank you very much, Mr. White.

Senator MCKELLAR. I think that I would like to ask the Corps of Engineers a question. Colonel Walsh would be in the best position to answer it.

How has the percentage of farm houses increased that use electricity in Tennessee since these dams were started? Have you any figures on that?

Colonel WALSH. I cannot give that accurately, but I know it has increased many, many times.

Senator MCKELLAR. If you will get that information and put it in the record, I will be greatly obliged to you.

Colonel WALSH. I will do that, sir.

Senator MCKELLAR. Thank you, sir.

(The information requested is as follows:)

At the end of the fiscal year 1950, 23 times as many farms in the TVA area had electricity as were served in 1933.

Senator MCCLELLAN. Is there anything else, Senator McKellar?

Senator MCKELLAR. If there are any other witnesses that would like to be heard, either one way or the other, we should like to hear them.

Senator MCCLELLAN. This concludes the list that was furnished me. If there is anyone else present who wants to be heard, the committee will be glad to hear him.

Senator CARLSON. Senator, I wish to state that I think that you and the Senator from Kentucky have made a pretty good case here and have had some spendid witnesses.

Senator MCKELLAR. Thank you.

Senator CLEMENTS. Thank you, sir. We have a meritorious project.

Senator DWORSHAK. Mr. Chairman, several references have been made by some of the witnesses to the need of providing additional electric energy in that section. Have we any letter or statement from the Defense Electric Power Administration on this? Have they been requested to submit anything? I understand that under the pre-

vailing procedure, none of the projects involving power generation is considered by the Administration until the Defense Electric Power Administration has first given consideration to the project.

Senator McClellan. It has not been submitted up to the moment, I am advised by the clerk of the committee.

Senator McKellar. On the other hand, one of the dams has been spoken of here, the Cheatham Dam, and the other dam in Tennessee, too, Old Hickory—they certainly approved those dams, because they had a budget estimate on them.

Senator Dworshak. I would like to have a statement from the DEPA on that. It might help.

How about the Bureau of the Budget? They have not made a statement on this either?

(The comments of the DEPA referred to follow:)

Department of the Interior,
Office of the Secretary,
Washington D. C., September 14, 1951.

Hon. John L. McClellan,
Chairman, Committee on Public Works,
United States Senate, Washington, D. C.

My Dear Senator McClellan: On August 27, 1951, there was referred to the Defense Electric Power Administration a request of the Subcommittee on Flood Control—Rivers and Harbors, United States Senate, for comment on two bills, S. 97 relating to power facilities at Cheatham Dam, Tenn., and S. 98 relating to modification of Cumberland River project.

S. 97 would amend the comprehensive plan of improvement of the Cumberland River and tributaries for navigation, flood control, power development, and other purposes authorized by section 1 of the act of Congress of July 24, 1946 (Public Law 525, 79th Cong.). Cheatham Dam, presently under construction, is located downstream from Wolf Creek, Dale Hollow, and Center Hill. The Army Corps of Engineers proposes the installation of three 12,000-kilowatt units which would add 160,000,000 kilowatt-hours of average annual energy to the Cumberland River system. Commercial operation is scheduled as follows: First unit, June 1954; second unit, October 1954; third unit, January 1955. Assuming prompt enactment of S. 97 and the appropriation of necessary funds as required and that materials can be made available when needed, the above schedule appears reasonable. Since the above facilities are included as a power resource and are a part of the expansion program needed to meet defense loads and essential civilian requirements, it is recommended that prompt enactment of S. 97 be approved by the Congress.

S. 98 would authorize construction, operation, and maintenance of the Lower Cumberland Dam and Reservoir on the Cumberland River, Ky. and Tenn., for navigation, flood control, hydroelectric power, and other purposes. Defense Electric Power Administration would prefer not to comment on this project until after the Corps of Engineers completes a project report which, we understand is presently being prepared. Deferment of comment on this project will also permit a further review by this Administration of the need for additional power facilities for defense and essential civilian requirements in 1955 and later years.

The Bureau of the Budget has advised me that there is no objection to the submission of this report.

Sincerely yours,

Oscar L. Chapman,
Secretary of the Interior.

Senator McClellan. Yes, I placed it in the record.

Senator Dworshak. I have not seen it. They approved it?

Senator McClellan. They approved the Cheatham Dam, but they withheld committal on the lower Cumberland.

Senator Dworshak. Until additional information is made available?

Senator McCLELLAN. That is right.

Senator McKELLAR. On this dam that we have been talking about on the lower part of the river.

Senator DWORSHAK. One more question.

This project would develop 130,000 kilowatts of power. Would that all be firm power?

Senator McKELLAR. The percentage will be very different after we get the Johnsonville steam plant going.

Colonel WALSH. The firm capacity, sir, is 130,000.

Senator DWORSHAK. That is firm?

Colonel WALSH. Yes, sir.

Senator McKELLAR. Mr. Chairman, I think that these gentlemen have made out a good case. I hope we can get early action.

Senator McCLELLAN. The Chair wants to express appreciation to all of them for their cooperation in making it possible for us to conclude the hearings this morning so that we do not have to have another day on it.

The committee will stand in recess until called by the chairman.

(Whereupon, at 12:10 p. m., the subcommittee adjourned.)

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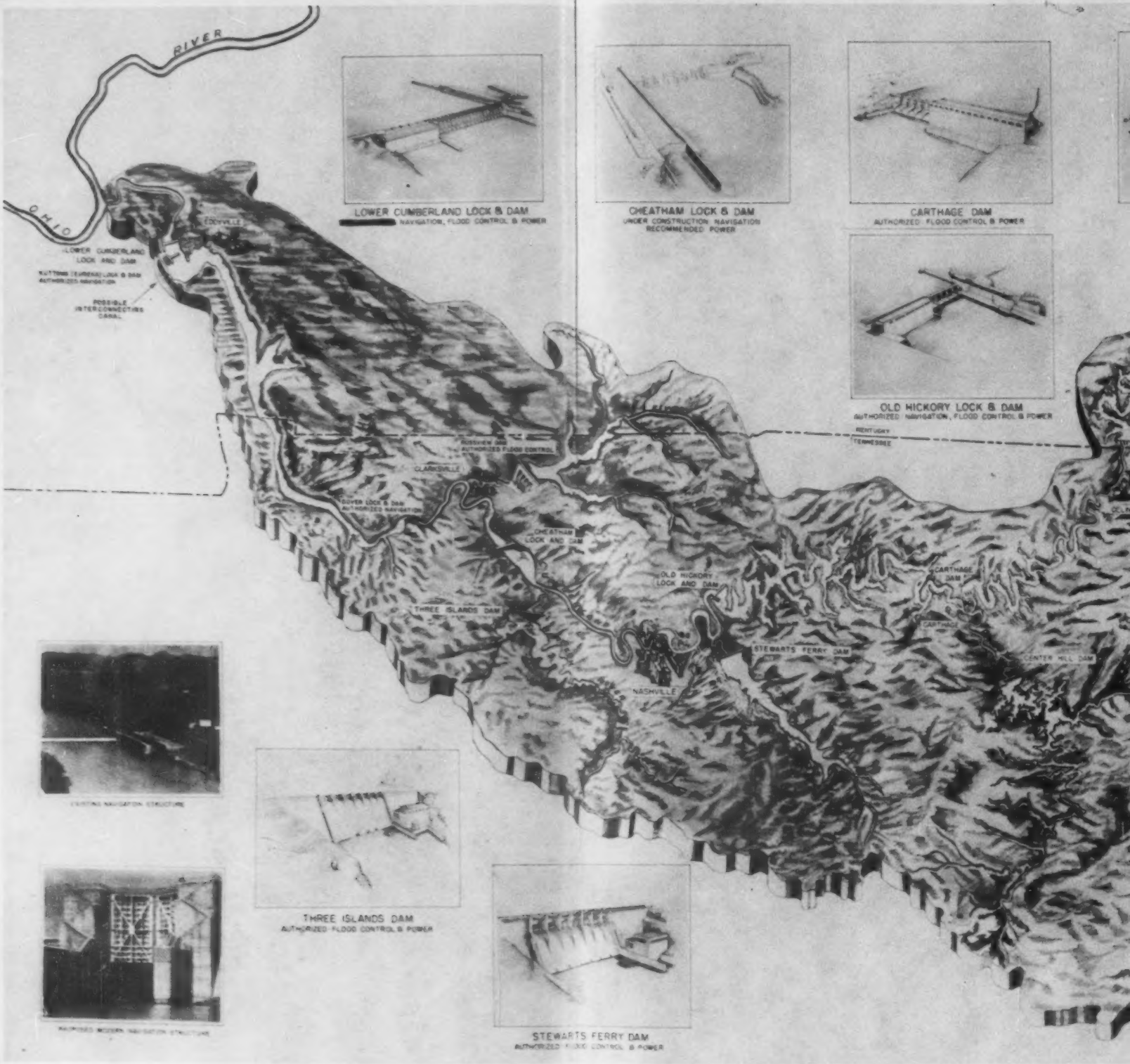
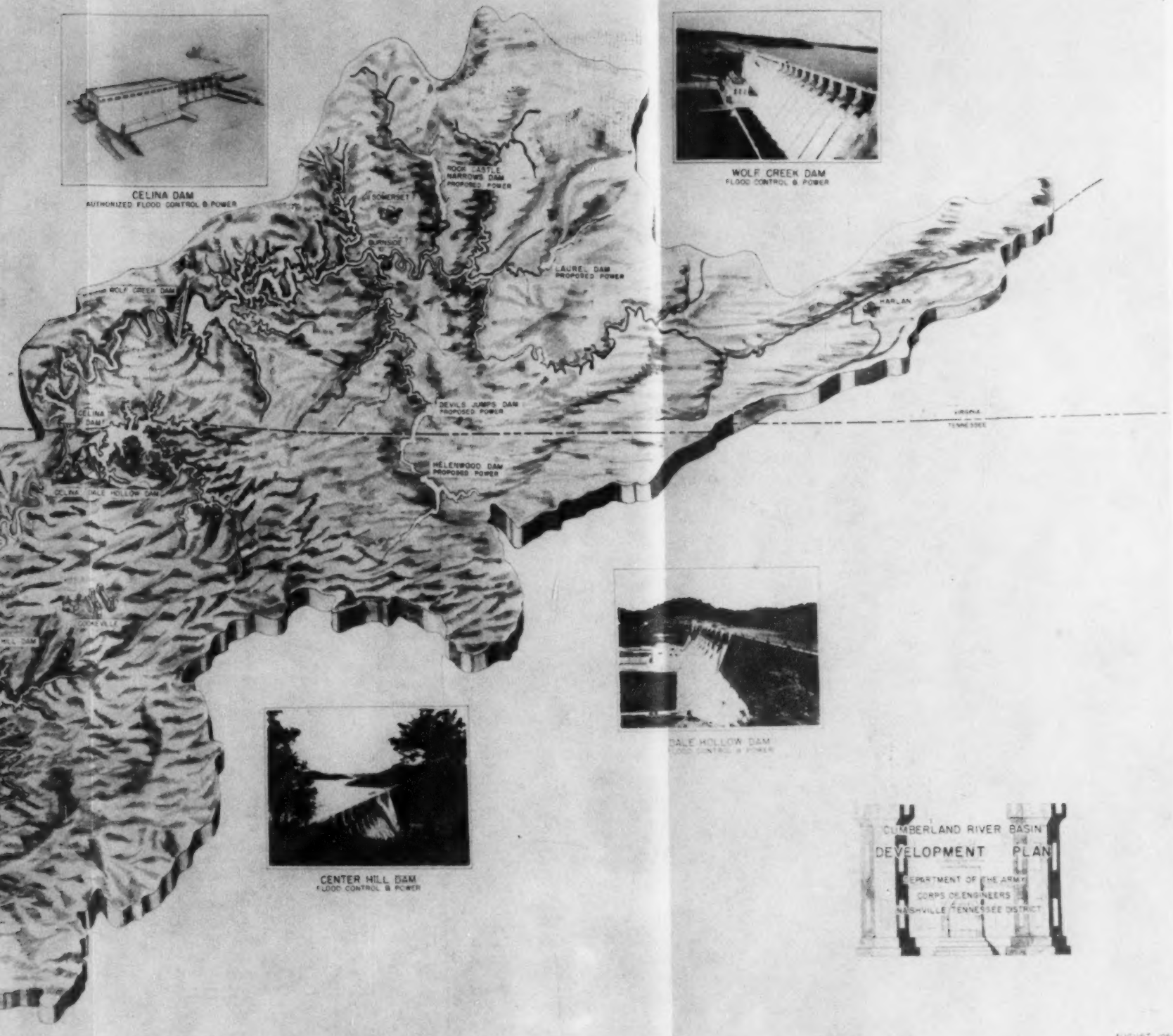

OHIO RIVER
KNOXVILLE
LOWER CUMBERLAND LOCK AND DAM
POSSIBLE INTERCONNECTING CANAL
LOWER CUMBERLAND LOCK & DAM
NAVIGATION, FLOOD CONTROL & POWER
CHEATHAM LOCK & DAM
UNDER CONSTRUCTION NAVIGATION
RECOMMENDED POWER
CARTHAGE DAM
AUTHORIZED FLOOD CONTROL & POWER
OLD HICKORY LOCK & DAM
AUTHORIZED NAVIGATION, FLOOD CONTROL & POWER
KENTUCKY
TENNESSEE
RUSSELLVILLE
AUTHORIZED FLOOD CONTROL
CLARKSVILLE
DAVER LOCK & DAM
AUTHORIZED NAVIGATION
CHEATHAM LOCK AND DAM
OLD HICKORY LOCK AND DAM
THREE ISLANDS DAM
CARTHAGE
STEWARTS FERRY DAM
NASHVILLE
CENTER HILL DAM
EXISTING NAVIGATION STRUCTURE
PROPOSED MODERN NAVIGATION STRUCTURE
THREE ISLANDS DAM
AUTHORIZED FLOOD CONTROL & POWER
STEWARTS FERRY DAM
AUTHORIZED FLOOD CONTROL & POWER

CELINA DAM
AUTHORIZED FLOOD CONTROL & POWER

WOLF CREEK DAM
FLOOD CONTROL & POWER

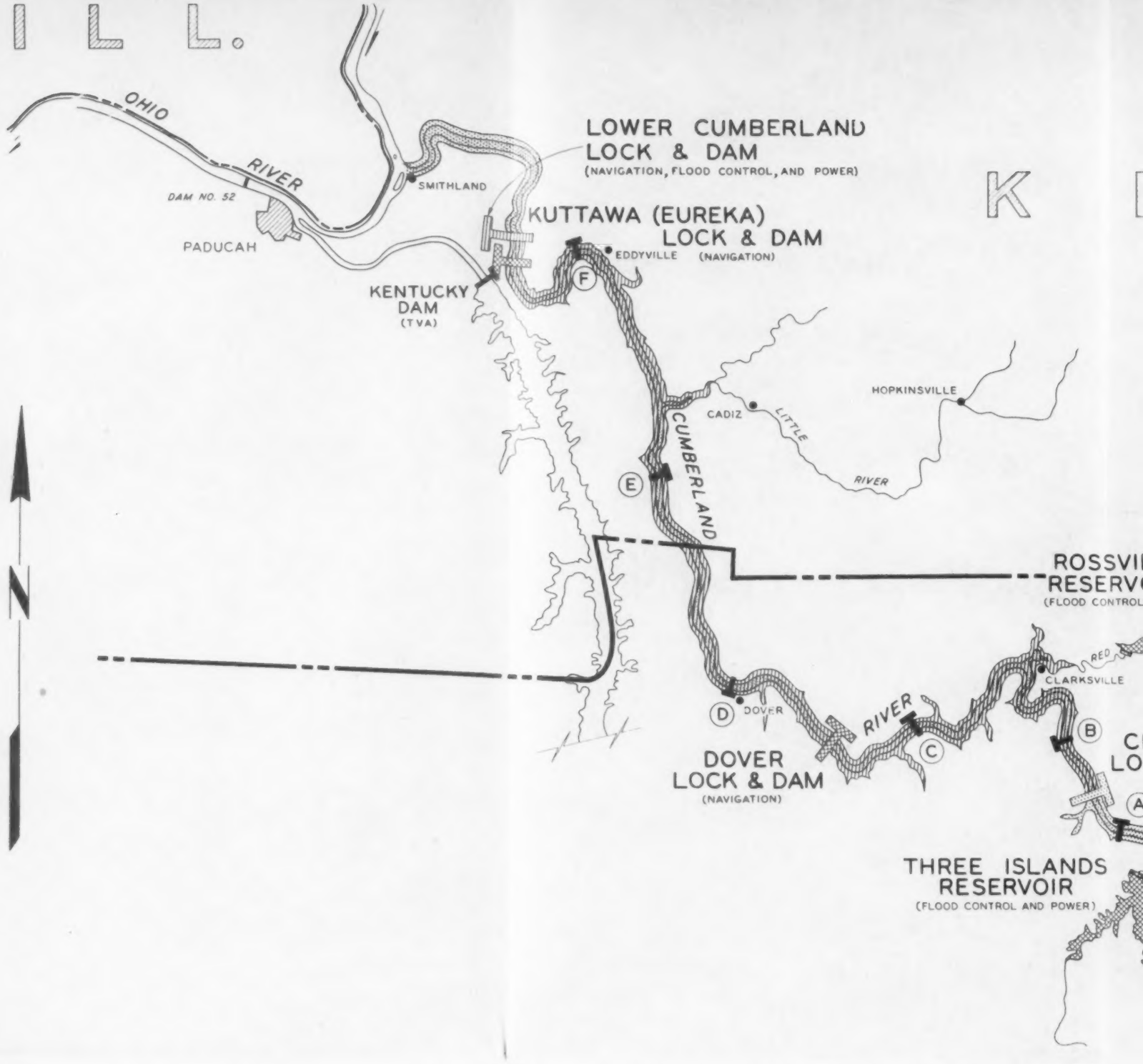


DALE HOLLOW DAM
FLOOD CONTROL & POWER

CENTER HILL DAM
FLOOD CONTROL & POWER

CUMBERLAND RIVER BASIN
DEVELOPMENT PLAN
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
NASHVILLE TENNESSEE DISTRICT

AUGUST 1950


ILL.
OHIO
RIVER
DAM NO. 52
PADUCAH
SMITHLAND
LOWER CUMBERLAND
LOCK & DAM
(NAVIGATION, FLOOD CONTROL, AND POWER)
KUTTAWA (EUREKA)
LOCK & DAM
EDDYVILLE (NAVIGATION)
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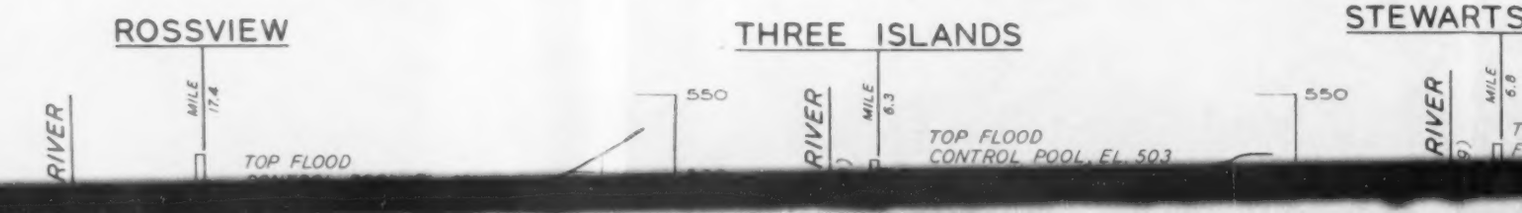
ROSSVIEW
THREE ISLANDS
STEWARTS
RIVER
MILE
17.4
TOP FLOOD
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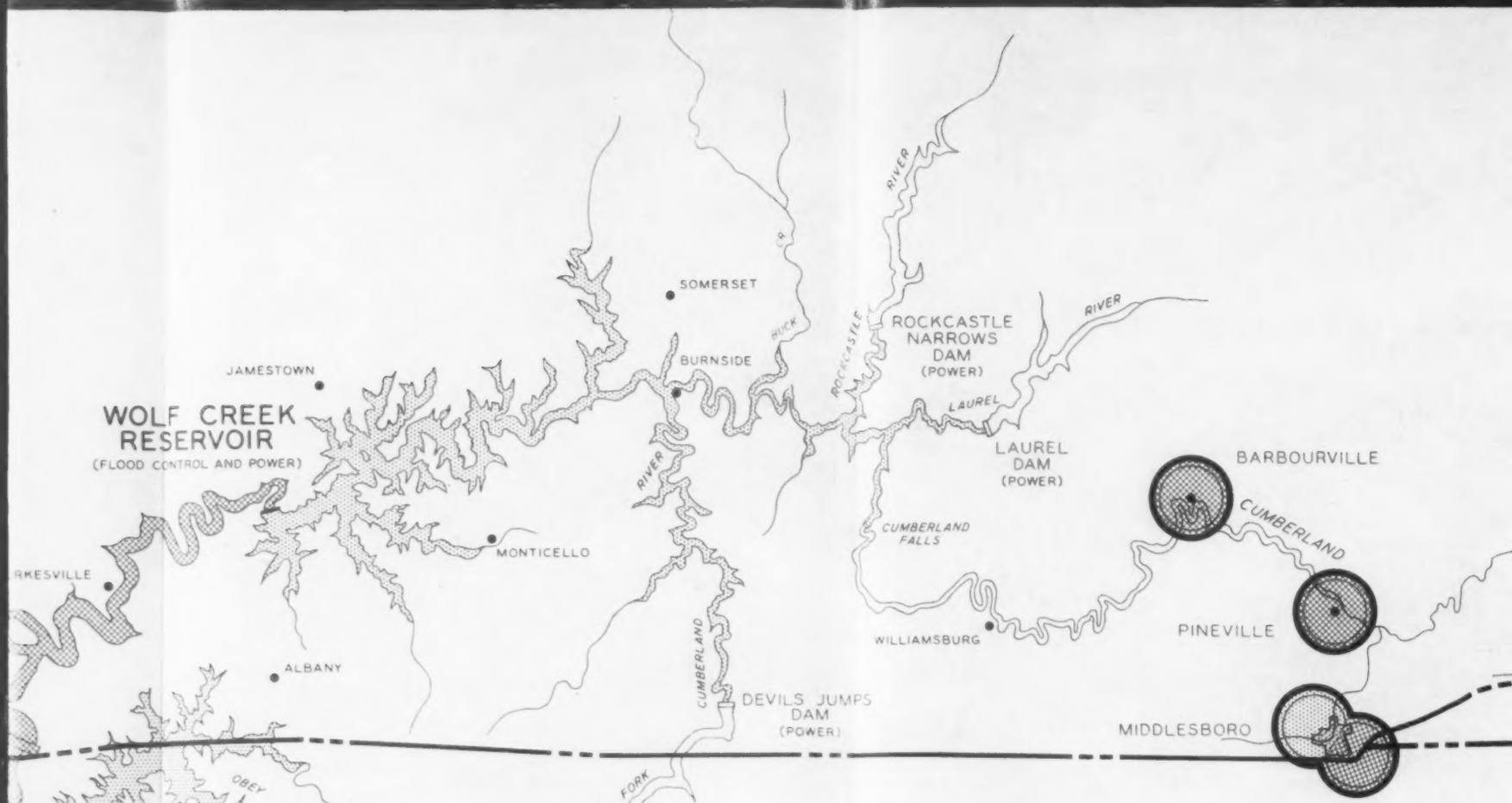
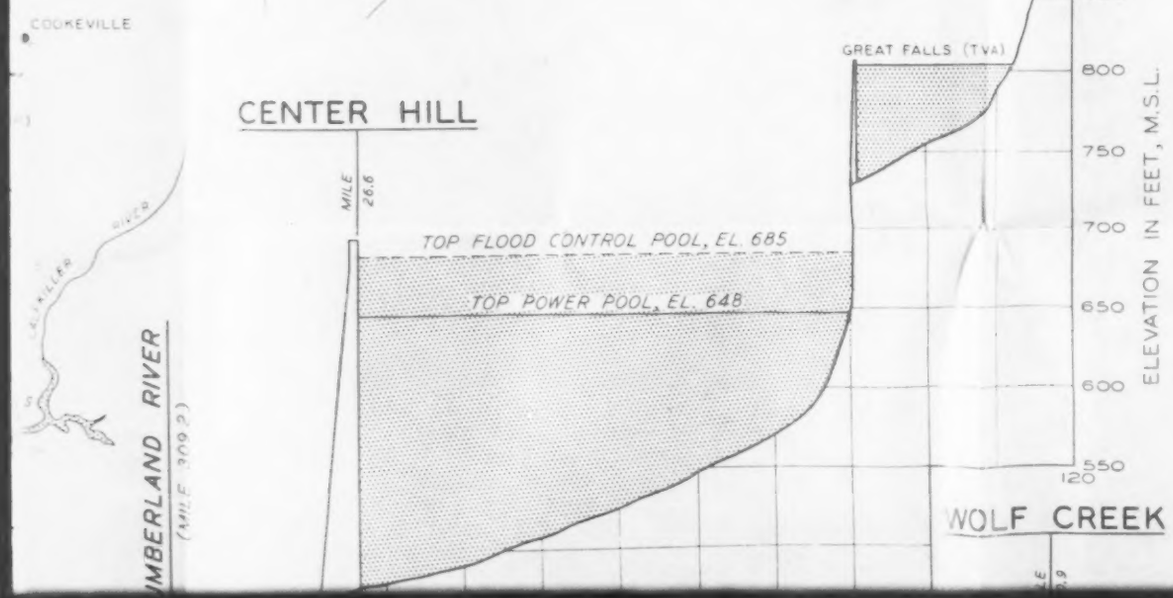
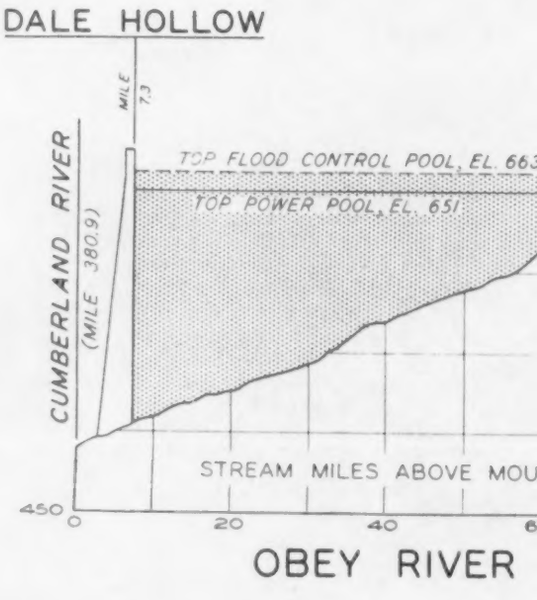
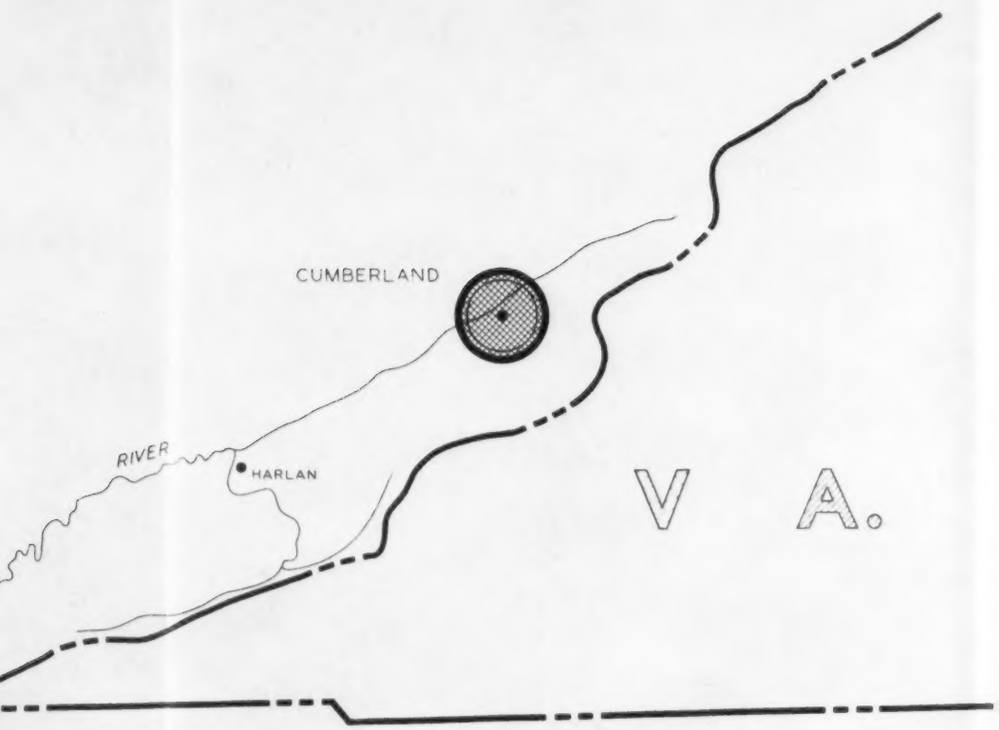
9.3
TOP FLOOD
CONTROL POOL, EL. 503
550
RIVER
MILE
6.8

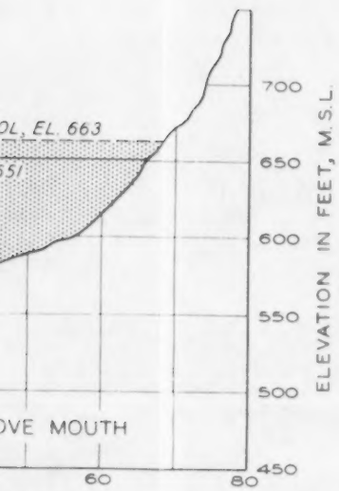
E N T U C K Y
JAMESTOWN
WOLF CREEK RESERVOIR
(FLOOD CONTROL AND POWER)
BURKESVILLE
RIVER
CELINA DAM
(FLOOD CONTROL AND POWER)
CELINA
OBEY
CUMBERLAND
DALE HOLLOW RESERVOIR
(FLOOD CONTROL AND POWER)
LIVINGSTON
GAINESBORO
CARTHAGE DAM (FLOOD CONTROL AND POWER)
CARTHAGE
GALLATIN
OLD HICKORY LOCK & DAM
(NAVIGATION, FLOOD CONTROL AND POWER)
CHEATHAM LOCK & DAM
(NAVIGATION)
SPRINGFIELD
RED
RIVER
OSSVIEW
ESERVOIR
OD CONTROL ONLY)
RKSVILLE
NDS
HARPETH
NASHVILLE
RIVER
STEWARTS FERRY RESERVOIR
(FLOOD CONTROL AND POWER)
STONES
RIVER
MURFREESBORO
COOKEVILLE
CANEY FORK
CENTER HILL RESERVOIR
(FLOOD CONTROL AND POWER)
CENTER
RIVER
GREAT FALLS DAM (TVA)
MC MINNVILLE
BERLAND RIVER
(MILE 313.2)
E N N E S S E E
WARTS FERRY
NOMINAL TOP POWER POOL
(4) EL. 490, SUMMER SEASON
(3) EL. 483, WINTER SEASON
TOP
FLOOD CONTROL POOL EL. 507.5
550
MILE 6.8
RIVER


SOMERSET
JAMESTOWN
BURNSIDE
WOLF CREEK
RESERVOIR
(FLOOD CONTROL AND POWER)
ROCKCASTLE
NARROWS
DAM
(POWER)
LAUREL
DAM
(POWER)
BARBOURVILLE
CUMBERLAND
CUMBERLAND FALLS
MONTICELLO
WILLIAMSBURG
PINEVILLE
ALBANY
DEVILS JUMPS
DAM
(POWER)
MIDDLESBORO
DALE HOLLOW
RESERVOIR
(FLOOD CONTROL AND POWER)
LIVINGSTON
HELENWOOD
DAM
(POWER)
COOKEVILLE
RIVER
FORK
SOUTH

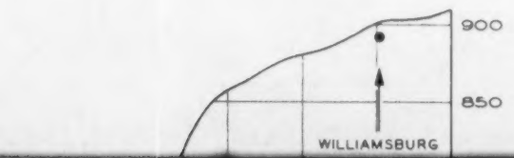

CENTER HILL
MILE 26.6
TOP FLOOD CONTROL POOL, EL. 685
TOP POWER POOL, EL. 648
GREAT FALLS (TVA)
ELEVATION IN FEET, M.S.L.
850
800
750
700
650
600
550
120
WOLF CREEK


DALE HOLLOW
MILE 7.3
CUMBERLAND RIVER
(MILE 380.9)
TOP FLOOD CONTROL POOL, EL. 663
TOP POWER POOL, EL. 651
STREAM MILES ABOVE MOU
450
0
20
40
OBEY RIVER





VER



LEGEND

TYPE OF IMPROVEMENT:

6-FOOT CANALIZATION

9-FOOT CANALIZATION

LOCAL FLOOD PROTECTION

RESERVOIR

STATUS:

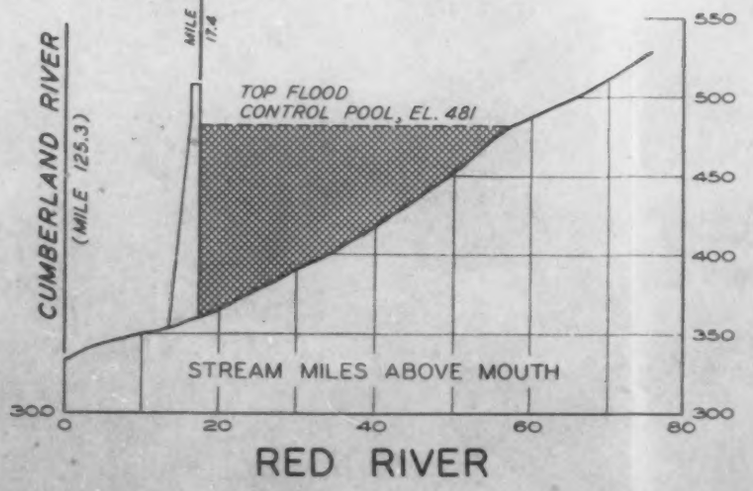
EXISTING OR UNDER CONSTRUCTION

RESERVOIR
(FLOOD CONTROL AND POWER)

HARPETH

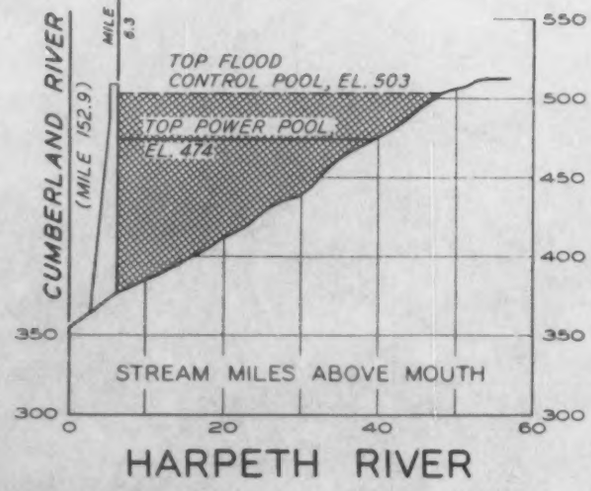
T E N

ROSSVIEW



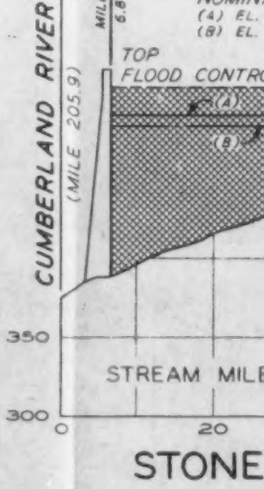
RED RIVER

THREE ISLANDS



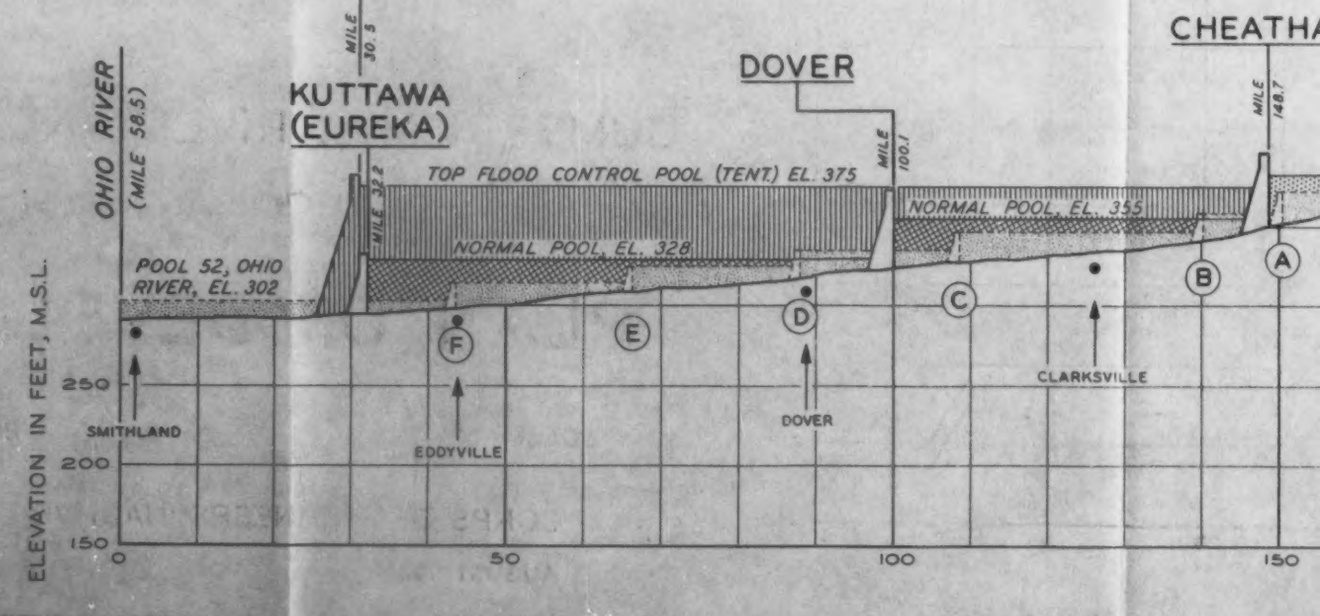
HARPETH RIVER

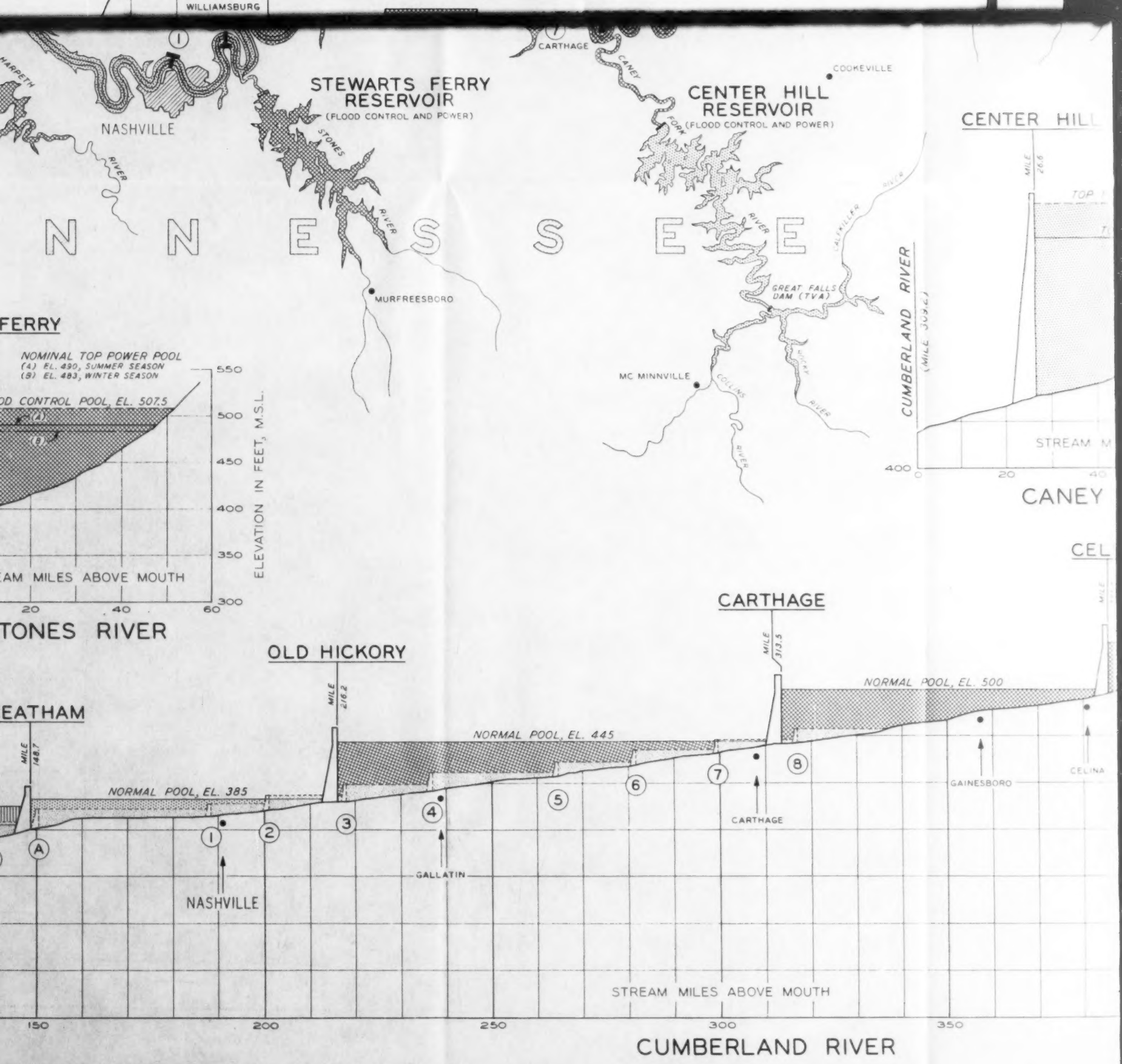
STEWARTS FERRY



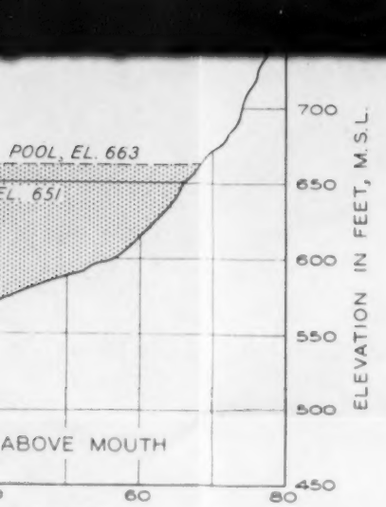
STONE

LOWER CUMBERLAND

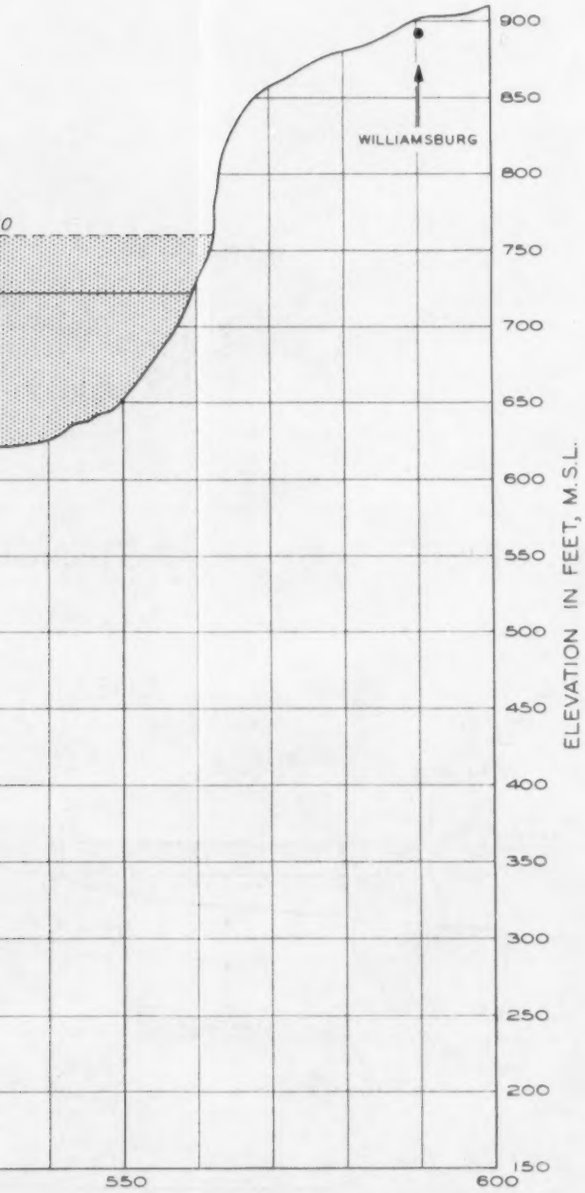



WILLIAMSBURG
CARTHAGE
CANEY
COOKEVILLE
STEWARTS FERRY RESERVOIR
(FLOOD CONTROL AND POWER)
CENTER HILL RESERVOIR
(FLOOD CONTROL AND POWER)
NASHVILLE
STONES RIVER
CUMBERLAND RIVER
CALFKILLER RIVER
MURFREESBORO
GREAT FALLS DAM (TVA)
MC MINNVILLE
COLLINS RIVER
HICKEY
FERRY
NOMINAL TOP POWER POOL
(A) EL. 490, SUMMER SEASON
(B) EL. 483, WINTER SEASON
OD CONTROL POOL, EL. 507.5
ELEVATION IN FEET, M.S.L.
550
500
450
400
350
300
AM MILES ABOVE MOUTH
20
40
60
TONES RIVER
CENTER HILL
MILE 26.6
TOP
STREAM M
400
0
20
40
CANEY
CEL
EATHAM
MILE 148.7
OLD HICKORY
MILE 216.2
CARTHAGE
MILE 313.5
NORMAL POOL, EL. 500
NORMAL POOL, EL. 445
NORMAL POOL, EL. 385
A
1
2
3
4
5
6
7
8
NASHVILLE
GALLATIN
CARTHAGE
GAINESBORO
CELINA
STREAM MILES ABOVE MOUTH
150
200
250
300
350
CUMBERLAND RIVER

COOKEVILLE
CENTER HILL
MILE 26.6
TOP FLOOD CONTROL POOL, EL. 685
TOP POWER POOL, EL. 648
GREAT FALLS (TVA)
CUMBERLAND RIVER
(MILE 309.2)
STREAM MILES ABOVE MOUTH
ELEVATION IN FEET, M.S.L.
850
800
750
700
650
600
550
400
450
0
20
40
60
80
100
120
CANEY FORK RIVER
WOLF CREEK
MILE 460.9
TOP FLOOD CONTROL POOL, EL. 760
TOP POWER POOL, EL. 723
EXTREME LOW WATER
CELINA
MILE 385.8
NORMAL POOL, EL. 550
NORMAL POOL, EL. 500
BURNSIDE
BURKESVILLE
GAINESBORO
CELINA
350
400
450
500
RIVER
CUMBERLAND RIVER
(MILE 380.9)
MILE 7.3
TOP FLOOD CONTROL POOL, EL.
TOP POWER POOL, EL. 651
STREAM MILES ABOVE M
OBEY RIVER



RIVER



TYPE OF IMPROVEMENT:

6-FOOT CANALIZATION

9-FOOT CANALIZATION

LOCAL FLOOD PROTECTION

RESERVOIR

STATUS:

EXISTING OR UNDER CONSTRUCTION

AUTHORIZED FOR CONSTRUCTION

CONSIDERED FOR AUTHORIZATION

PROPOSED FOR FUTURE CONSIDERATION

CUMBERLAND RIVER AND TRIBUTARIES

KENTUCKY AND TENNESSEE

PLAN OF DEVELOPMENT

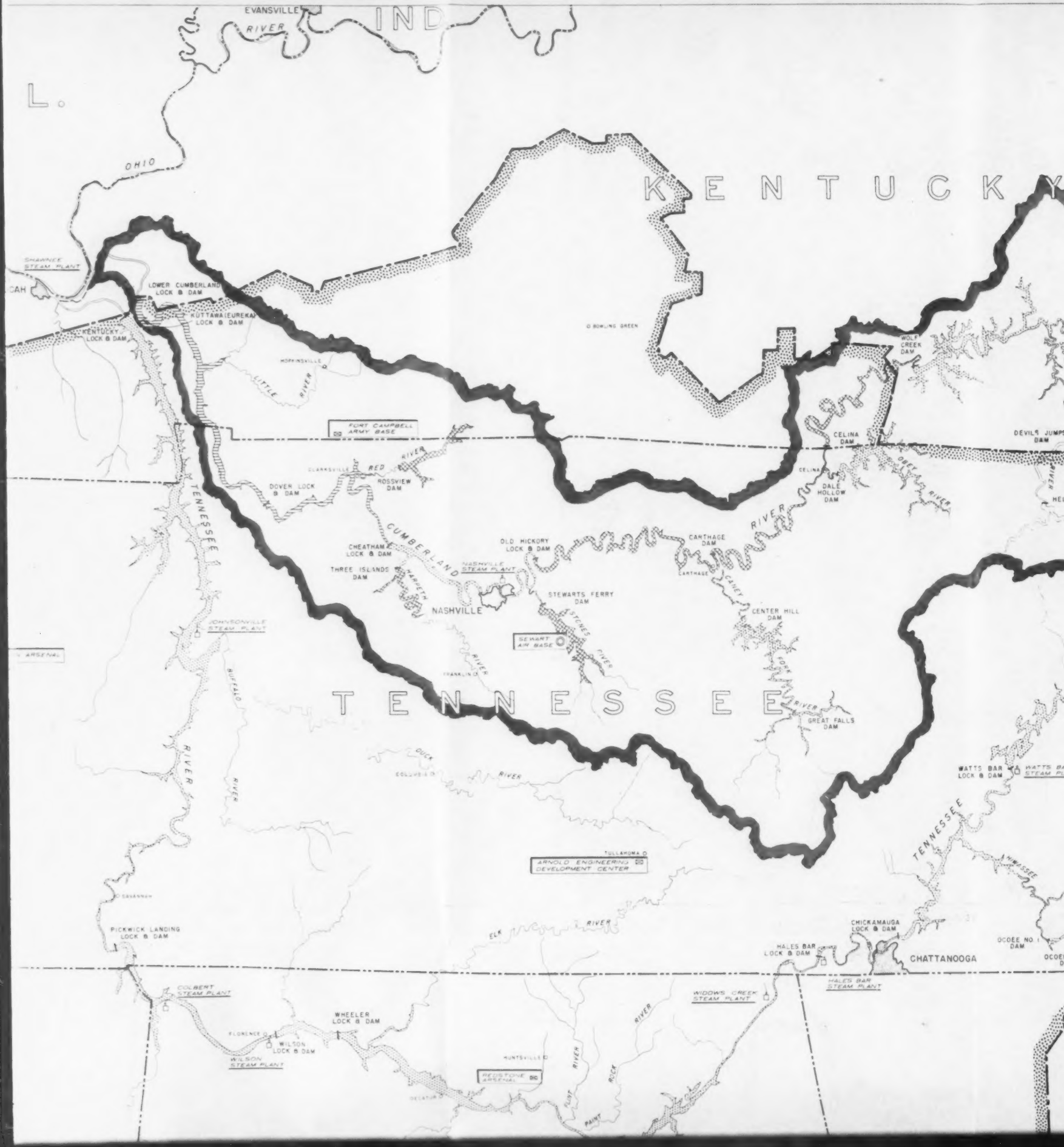
SCALE 10 0 10 20 30 MILES

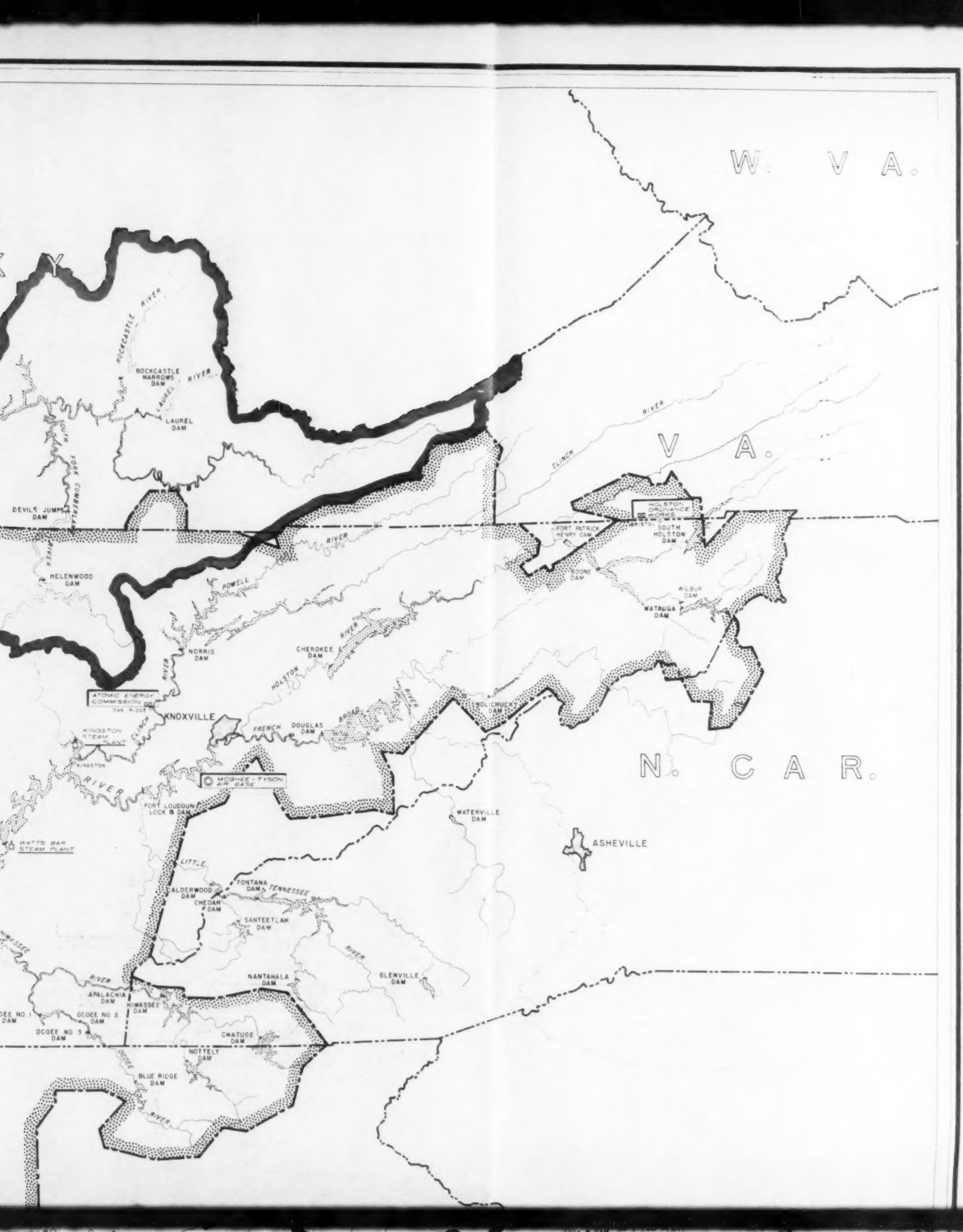
CORPS OF ENGINEERS, NASHVILLE, TENNESSEE

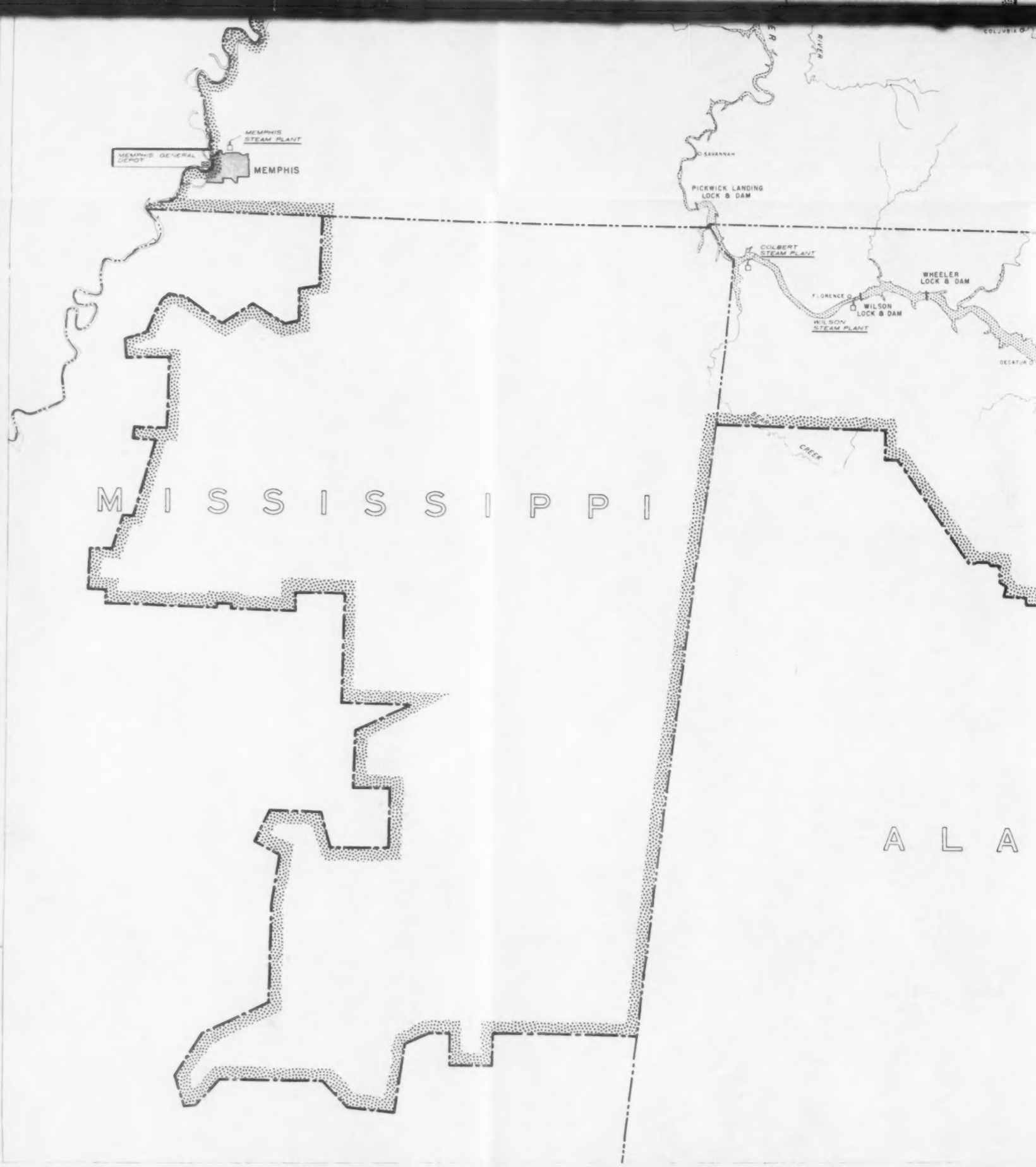
AUGUST 1951

1A

88419 O - 51 (Face p. 36) No. 2


EVANSVILLE
IND
RIVER
L.
OHIO
KENTUCKY
SHAWNEE STEAM PLANT
CAIRO
LOWER CUMBERLAND LOCK & DAM
KUTTAWA (EUREKA) LOCK & DAM
KENTUCKY LOCK & DAM
BOWLING GREEN
WOLF CREEK DAM
HOPKINSVILLE
LITTLE RIVER
FORT CAMPBELL ARMY BASE
CELINA DAM
DEVILS JUMP DAM
CLARKSVILLE
RED RIVER
DOVER LOCK & DAM
ROSSVIEW DAM
CELINA
OBEY RIVER
DALE HOLLOW DAM
TENNESSEE
CUMBERLAND RIVER
CHEATHAM LOCK & DAM
OLD HICKORY LOCK & DAM
CARTHAGE DAM
THREE ISLANDS DAM
HARPETH
NASHVILLE STEAM PLANT
CARTHAGE
CANEY FORK
NASHVILLE
STEWARTS FERRY DAM
CENTER HILL DAM
JOHNSONVILLE STEAM PLANT
SEWART AIR BASE
STONES RIVER
FRANKLIN
TENNESSEE
GREAT FALLS DAM
BUFFALO RIVER
DUCK RIVER
WATTS BAR LOCK & DAM
TULLAHOMA
ARNOLD ENGINEERING DEVELOPMENT CENTER
TENNESSEE
CHICKAMAUGA LOCK & DAM
PICKWICK LANDING LOCK & DAM
ELK RIVER
HALES BAR LOCK & DAM
CHATTANOOGA
COLBERT STEAM PLANT
WHEELER LOCK & DAM
FLORENCE
WILSON LOCK & DAM
WILSON STEAM PLANT
WIDOWS CREEK STEAM PLANT
HALES BAR STEAM PLANT
HUNTSVILLE
REDSTONE ARSENAL
PAINT ROCK RIVER
DECATUR


W. V A.
V A.
N. CAR.
ROCKCASTLE RIVER
ROCKCASTLE NARROWS DAM
LAUREL RIVER
LAUREL DAM
SOUTH FORK CUMBERLAND RIVER
DEVILS JUMP DAM
CLINCH RIVER
HOLSTON ORDNANCE WORKS
BRISTOL
FORT PATRICK HENRY DAM
SOUTH HOLSTON DAM
BOONE DAM
WILBUR DAM
WATAUGA DAM
HELENWOOD DAM
POWELL RIVER
NORRIS DAM
CHEROKEE DAM
HOLSTON RIVER
ATOMIC ENERGY COMMISSION
OAK RIDGE
KNOXVILLE
CLINCH RIVER
FRENCH BROAD RIVER
DOUGLAS DAM
HOLICHUCKY DAM
KINGSTON STEAM PLANT
KINGSTON
McGHEE-TYSON AIR BASE
FORT LOUDOUN LOCK & DAM
WATTS BAR STEAM PLANT
WATERVILLE DAM
ASHEVILLE
LITTLE TENNESSEE RIVER
CALDERWOOD DAM
FONTANA DAM
CHEOAH DAM
SANTEETLAH DAM
GLENVILLE DAM
NANTAHALA DAM
APALACHIA DAM
HIWASSEE DAM
OCOEE NO 1 DAM
OCOEE NO 2 DAM
OCOEE NO 3 DAM
CHATUGE DAM
NOTTELY DAM
BLUE RIDGE DAM
OCOEE RIVER


MEMPHIS STEAM PLANT
MEMPHIS GENERAL DEPOT
MEMPHIS
PICKWICK LANDING LOCK & DAM
COLBERT STEAM PLANT
WHEELER LOCK & DAM
WILSON LOCK & DAM
WILSON STEAM PLANT
MISSISSIPPI
A L A

TENNESSEE
RIVER
TULLAHOMA
ARNOLD ENGINEERING DEVELOPMENT CENTER
ELK RIVER
CHICKAMAUGA LOCK & DAM
HALES BAR LOCK & DAM
CHATTANOOGA
HALES BAR STEAM PLANT
WIDOWS CREEK STEAM PLANT
HUNTSVILLE
REDSTONE ARSENAL
DECATUR
GUNTERSVILLE LOCK & DAM
GUNTERSVILLE
FLINT RIVER
PAINT ROCK RIVER
LITTLE TENNESSEE RIVER
CALDERWOOD DAM
CHEOAH DAM
FONTANA DAM
SANTEETLAH DAM
NANTAHALA DAM
GLENVILLE DAM
APALACHIA DAM
HIWASSEE DAM
OCOEE NO. 1 DAM
OCOEE NO. 2 DAM
OCOEE NO. 3 DAM
CHATUGE DAM
NOTTELY DAM
BLUE RIDGE DAM
OCOEE RIVER
ATLANTA
BIRMINGHAM
GEORGIA
ABAMA
NOTE: PLANTS RATED LESS THAN 10,000 KW NOT SHOWN

TULLAHOMA
ARNOLD ENGINEERING DEVELOPMENT CENTER
SAVANNAH
PICKWICK LANDING LOCK & DAM
ELK RIVER
TENNESSEE RIVER
CHICKAMAUGA LOCK & DAM
APALACHIA DAM
OCOEE NO. 1 DAM
OCOEE NO. 2 DAM
OCOEE NO. 3 DAM
HALES BAR LOCK & DAM
CHATTANOOGA
HALES BAR STEAM PLANT
COLBERT STEAM PLANT
WHEELER LOCK & DAM
FLORENCE
WILSON LOCK & DAM
WILSON STEAM PLANT
WIDOWS CREEK STEAM PLANT
HUNTSVILLE
REDSTONE ARSENAL
DECATUR
FLINT RIVER
ROCK
PAINT
GUNTERSVILLE LOCK & DAM
GUNTERSVILLE
CREEK
ATL
BIRMINGHAM
G E
A L A B A M A
NOTE PLANTS RATED LESS TH

E O R G I A

— LEGEND —

PROJECT STATUS

COMPLETE OR UNDER CONSTRUCTION	
AUTHORIZED FOR CONSTRUCTION	
CONSIDERED FOR AUTHORIZATION	
FUTURE	

CUMBERLAND AND TENNESSEE
RIVER BASINS

POWER SUPPLY AND SERVICE AREA

TVA SYSTEM

SCALE 10 0 10 20 30 40 50 MILES

CORPS OF ENGINEERS, NASHVILLE DISTRICT

AUGUST 1951

2

ATED LESS THAN 10,000 KW NOT SHOWN

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